Nortel Business Communications Manager 450 1.0

Configuration — System

Release: 1.0
Document Revision: 01.05

NN40160-501

Document status: Standard
Document issue: 01.05
Document date: October 2009
Product release: BCM450 1.0
Job function: Configuration
Type: Technical Publication
Language type: English

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New in this release

This is the initial release of the BCM450 platform. This document contains information about configuring the BCM450 system in Release 1.0

Features

See the following sections for information found in this document.

BCM450 configuration

You configure your BCM450 system to provide the required system functionality. A BCM450 system cannot function until it is configured.

You can configure basic parameters (initial parameters and startup parameters) through Element Manager, Telset Administration, or the Startup Profile template. For more information about configuring your BCM450 system see, BCM450 system configuration preparation (page 25).

Element Manager configuration

To configure your BCM450 system most efficiently, you can download and install Element Manager on your computer. You can configure all BCM system parameters through Element Manager. For more information see, Element Manager (page 13)and BCM450 configuration with Element Manager (page 41).

Telset Administration configuration

You can use Telset Administration through a digital telephone with a two-line display to set the BCM configuration parameters.

You cannot set all the basic parameters using Telset Administration. Therefore, after configuring the initial parameters, you must use Element Manager to set the startup parameters. For more information see, Telset Administration (page 14) and BCM450 configuration with Telset Administration (page 35).

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Startup Profile configuration

An experienced administrator uses the Startup Profile tool to customize a template with common BCM system parameters. The administrator uses this template to configure a single system or multiple systems. For more information see,Startup Profile (page 14) and BCM450 configuration with Startup Profile (page 59).

Internal resources configuration

You can configure the internal resources on your BCM main unit. The internal resources include IP trunks, IP sets, and applications resources. For more information see, IP sets and applications configuration (page 17) and BCM450 internal resources configuration (page 63).

Media Bay Module configuration

You can configure media bay modules (MBMs) for the BCM450. Configurimg main unit media bay modules (MBM) is a two-stage process. First, identify the type of installed MBMs to the BCM system, and then configure the required variables. The BCM system suggests default values for your MBM. For more information see, BCM450 MBM and legacy Norstar configuration (page 67).

Trunk configuration

Configure the trunk module parameters to define the line properties for your BCM system. For more information see, IP trunk module configuration (page 16)and BCM450 MBM and legacy Norstar configuration (page 67).

Music source configuration

The Music on Hold and Background Music features provide music to users. For these features to function properly, you must connect a music source to the BCM system and configure the music source. For more information see, BCM450 music source configuration (page 105).

Configuration testing

Perform basic testing and troubleshooting on BCM main unit, expansion units, media bay modules (MBM), and analog terminal adapter (ATA) For more information see, Basic configuration testing (page 113), BCM450 main unit testing (page 115), BCM450 expansion unit testing (page 117), BCM450 media bay modules testing (page 119), and BCM450 analog terminal adapter testing (page 121).

Dynamic device configuration

With dynamic device configuration, DN and line number allocation and assignment is dynamically performed by the system, as required, until either all hardware administered to a system is populated with the necessary DNs and line numbers, or the system has reached the maximum capacity.

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For more information about dynamic device configuration, see the following sections:

- Dynamic device configuration (page 15)
- BCM450 internal resources configuration (page 63)
- BCM450 MBM and legacy Norstar configuration (page 67)

Other Changes

See the following section for information about changes that are not feature related:

Directory numbers

This document is updated to add section ‘Directory numbers’ in chapter ‘Fundamentals’. For more information, see Directory numbers (page 16)

Market profile attributes reference

This document is updated to remove the references to VICAP in the chapter “Market profile attributes reference”.

Core parameters for market profiles

This document is updated to make changes in the tables in the section “Core parameters for market profiles”.

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Introduction

This guide describes how to configure the Business Communications Manager 450 Release 1.0 (BCM450 1.0) systems.

Navigation

- Fundamentals (page 13)
- System configuration (page 23)
- BCM450 system configuration preparation (page 25)
- Basic parameters configuration (page 33)
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- BCM450 MBM and legacy Norstar configuration (page 67)
- BCM450 trunk module configuration (page 75)
- Dial-up resources configuration (page 79)
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- BCM450 music source configuration (page 105)
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- System parameters reference (page 123)
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- Market profile attributes reference (page 137)

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Fundamentals

This section provides conceptual information about BCM450 configuration.

Navigation

- Configuration interfaces (page 13)
- Scheduled services (page 15)
- Call-by-call service selection (page 15)
- Dynamic device configuration (page 15)
- SNMP management (page 19)
- Music source and BcmAmp (page 20)

Configuration interfaces

This section describes the methods to configure your BCM450 system.

While Element Manager is the primary management application, BCM450 also supports the programming of telephony and applications areas through Telset Administration, and through the Startup Profile template.

Element Manager

The primary management application for configuring and administering the BCM450 system is Element Manager. Element Manager is a client-based management application that runs on a Windows computer, or on a Citrix server.

You use Element Manager to connect to the BCM450 devices to be managed either through an IP network connection, or through the OAM port on a BCM450 main unit.

You can download Element Manager from the BCM450 web page and install it on your computer at any time. However, you cannot connect to a BCM450 system with Element Manager until the BCM450 main unit is installed and running.

Installing Element Manager in a Citrix environment

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You can run Element Manager in a Citrix environment, using the following software:

- Windows 2000 Server SP4 (fully patched)
- Citrix Metaframe XP Feature Release 3
- Citrix Program Neighborhood Version 7.0

When you run Element Manager in a Citrix environment, install Element Manager on a Citrix server. You can run Citrix Program Neighborhood to connect to the server and launch the Element Manager.

Element Manager is designed for single-user environments. A single installation of Element Manager extends the same user preferences to any Citrix user, including the device list and any saved passwords. Citrix administrators can ensure a secure environment by using one of the following approaches:

- install a copy of Element Manager for each user or group of users in different folders, with Windows permissions set for the folder to control access.
- in cases where a shared device tree is permitted, ensure that users do not save passwords, but instead enter a password each time they connect.

Startup Profile

The Startup Profile is a template containing the basic configuration parameters that you edit using Microsoft Excel. The Startup Profile is used to accelerate the initial installation programming of system-level parameters. It helps bring the BCM450 system to a basic operational and ready-to-customize state without using either Element Manager or Telset Administration.

The administrator must fill out the Startup Profile template, save it onto a USB storage device and insert the storage device into the USB port of the BCM450 main unit before the initial start-up. On start-up the BCM450 system reads the information and starts up with the correct system parameters and feature licensing already in place.

Telset Administration

Installers who are already familiar with Telset Administration can perform programming from the keypad of any telephone connected to the BCM450 device. This alleviates the need for access to a computer at the customer site. For more information about using Telset programming on the BCM450, see the following documents:

- *Telset Administration Guide* (NN40160-600)
- *CallPilot Telephone Administration Guide* (NN40090-500)

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- *Intelligent Contact Center Telephone Administration Guide* (NN40160-602)

Scheduled services

Use scheduled services to control how calls are answered in off-hours (Ringing Groups), how calls are routed at various times of the day, and how restrictions are applied on lines and telephones at specific times of the day.

With Element Manager, you can perform the following configuration functions for scheduled services:

- determine which schedules are active on the system for routing, restriction, and ringing schedules.
- set the time periods within each schedule for each day of the week.
- rename schedules.

Schedules are activated and deactivated through control telephones.

Restriction and Routing services require a service control password before users can change scheduling on a control telephone. You use the Service Control Password field to delete a current entry, and add a new password. Make a note of the password; the panel shows only asterisks.

Call-by-call service selection

The PRI Call-by-call Service Selection is region-specific to North America for a DTM set to a PRI module type.

By default, incoming calls on a PRI are routed based on the Called Party Number information within the call request. The last number of digits of the called party number that match the Received Number Length setting are used as Receive Digits to find a target line.

In North American PRI, the Call-by-Call services provides alternate routing maps to be defined in various ways, depending on the protocol defined for this PRI.

Dynamic device configuration

With dynamic device configuration, DN and line number allocation and assignment is dynamically performed by the system, as required, until either all hardware administered to a system is populated with the necessary DNs and line numbers, or the system has reached the maximum capacity.

Dynamic device configuration applies to internal components on the main unit including IP trunks, IP sets, and applications, as well as media bay modules (MBM) and legacy Norstar modules on the main unit and expansion unit.

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Directory numbers

If a set of directory numbers (call the set X) are configured (either IP Sets or MBM DNs) with the "Assign Target Lines" selected, then these DNs will have Target Lines assigned to them (assuming there are unused Target Lines available).

If a number (n) of the DNs in set X are subsequently Deconfigured, then although n DNs are gone, the state of the originally assigned Target Lines associated with these n DNs is:

- they remain programmed with the original DNs' Public and Private Configured numbers
- they remain assigned to the DN positions (that is, position 1-300) just Deconfigured

The effect of this is that if, after Deconfiguring n DNs from set X above, a new DN set Y is configured on the same bus on the system (IP Sets, Applications, MBM devices), then the first n number of the DNs in set Y will still have the Target Lines assigned to them that were originally assigned as part of Configured DN set X. This is independant of the ‘Assign Target Line’ option selection for this new Configured DN set Y.

The net effect to the administrator is that if s/he Configured DNs with Target Lines and then decides to Deconfigure and Reconfigure as different DNs, then the original Target Line assignments and Pub/Priv number programming follows the Reconfigured DNs.

IP trunk module configuration

Although IP trunks are not physical devices and you cannot remove them from the system, BCM450 supports modification of IP trunk line numbers. The initial values assigned by the system on the IP trunks are “guaranteed to work” values.

You can assign a larger range of line numbers than what is actually licensed for IP trunks. The effect is to reserve the line numbers beyond the current licensed line count for future additional IP trunk licenses. Lines beyond the licensed count do not boot until the necessary keycodes are provided to enable the additional lines.

The list of line numbers for IP trunks must be consecutive. If the available line numbers are segmented and the necessary number of consecutive line numbers does not exist, you receive an error. If this occurs, you must remove other lines in the system and restart line numbering for devices so the lines numbers are not as segmented and consecutive groups can be obtained for all devices.

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If additional licensing is added later for more IP trunks such that the licensed number of IP trunks is greater than the currently provisioned number, then the system will not automatically request additional line numbers for the new trunks. In this case the administrator must configure the new line numbers to populate the additional IP trunks. If additional licensed IP trunks are added and line numbers are reserved such that these additional trunks are covered, then no additional line numbering configuration operations are necessary.

IP sets and applications configuration

Main unit telephony resources includes a list of IP set DNs and a range of application DNs. Services assigned to the IP sets or applications device type are the DNs of these sets or DNs that an application can use respectively.

Application DNs are the DNs assigned to applications such as the CallPilot DN, the MeetMe DN, or Contact Center skillset DNs.

The ability to assign IP set and application DN services is limited by the maximum number of DNs for IP sets and applications respectively, and also by the maximum total number of relocatable DNs on the system.

There may be notes or warnings in the Configuration dialog box to notify the administrator of the impact of the configuration action. This may include a recommendation to restart, or that a service may be restarted automatically.

Additional configuration options specify whether or not target lines are desired for the DNs, and if so a starting public DN, and starting private DN can be assigned to target lines.

An available target line is one that is currently unassigned to any DN (even a Hunt Group DN) and has no programmed private or public receive digits assigned to it. Target line numbers may or may not be consecutive.

Conflicts of public or private line DNs, where the DN is used elsewhere, results in a failure of the public or private DN assignment to the set in question, but does not cause the entire request to fail. The sets are configured, but not all are successfully assigned public or private target line numbers if resource limitations prevent it.

Once a target line is configured with public or private numbers, deconfiguring DNs that have appearances of those target lines does not remove the public or private numbers from those target lines.

The DNs assigned to IP sets or applications do not need to be consecutive. If the relevant pool DNs are renumbered or changed, so the consecutive DNs do not exist, then the IP sets or applications have non-consecutive DNs. For this reason the low and high values for IP sets and applications represent the

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lowest and highest DN value currently in the respective assigned range. The total number of DNs assigned is not all the DN values in between the low and high values.

Configuring IP or Application DNs is a cumulative action. Every new successful configuration request adds the relevant count of IP or Application DNs to the existing range. Existing DNs are not affected or changed in any way. The default number of DNs to add is normally zero. This is a protection mechanism. You must change the number of DNs in the Number of DNs to add field to the desired number of additional DNs.

When you configure DNs there is an exception to the number of DNs you can add. The BCM450 system requires a minimum of three configured application DNs for applications to function correctly. When you configure application DNs, if there are fewer than three currently configured application DNs, then the minimum number possible to configure is set so that the final configured application DN count is at least three. For example, if through Set-based administration you complete a DN deconfiguration, and only two configured application DN remains, then the next time you configure application DNs the system would permit a minimum of two additional DNs to be configured for a final total of three.

Finally, you can partially configure IP sets and applications (but not MBMs) with fewer DNs then the licensed device count. If there are not sufficient DNs defined in the relevant pools then the number of available DNs are allocated to the services list.

Main unit and expansion unit MBM configuration

During media bay module (MBM) configuration, the BCM450 system provides suggested default values for the MBM. These suggestions include DNs or line numbers. If you change configuring data from the defaults provided and the configuration fails, then the configuration reverts back to the suggested values.

When configuring a line device, a starting line number is specified. Based on the MBM type and region configuration, the appropriate number of line numbers are allocated and associated with the ports of the MBM. If insufficient resources are available to complete the requested configuration then the device configuration fails.

For combination devices, configuration of the individual components is treated separately. It is possible for one part of a combination device to get configured while the other part fails because of insufficient resources.

The location of a device is independent of the bus value associated with a device. For example, an MBM in location “Main MBM 1” can be assigned Bus 10 in one configuration, but subsequent changes to the configuration can

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result in “Main MBM 1” assigned to Bus 11 (or any other valid bus value). The bus assigned to a device is now one of several resources that a device receives during configuration to become operational.

It is possible for a configuring request of a device to fail if sufficient resources are not available. This can be a result of insufficient contiguous line numbers, not enough remaining DNs, or no busses remaining. If sufficient resources are not available for a configuring request, the system presents a dialog box that the device configuration request failed.

When a BRI MBM is configured all loops on the MBM are defaulted as T-loops and the administrator must provide a starting line number for a BRI MBM upon configuration. It is important to note that a BRI MBM uses eight consecutive line numbers. This is to ensure a consecutive series of line numbers across a BRI MBM regardless of the loop type setting.

You configure the R2MFC MBM as a DTI-PRI MBM with additional configuration to set the attributes of the PRI protocol such that the device operates as an R2MFC.

DNs are dynamic and changing a loop on a BRI-ST device from S to T type completely removes those DNs from the system.

DSMn16+/32+ MBMs are capable of double density. If you want to maximize TDM sets on a system using an expansion unit, you need to set the dip settings on the DSM32+ MBMs in the chassis to double density mode.

SNMP management

SNMP (Simple Network Management Protocol) is a set of protocols for managing complex networks. SNMP-compliant devices, called agents, store meta-data in Management Information Bases (MIBs) and provide this data to SNMP requesters.

You can configure general SNMP settings, including enabling and disabling the SNMP agent, enabling and disabling versions of the SNMP agent, defining access permissions, and adding and deleting SNMP management stations.

You can create a list of SNMP managers who are permitted to query the BCM450 system by specifying their IP addresses. If you have specified SNMP managers, the BCM450 SNMP agent will respond only to SNMP requests from those IP devices.

You can use external SNMP clients, such as HP OpenView, to monitor theBCM450 system by means of read-only SNMP requests.

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The BCM450 main unit supports the following versions of SNMP:

- SNMP v1 — the first implementation of SNMP; this version supports such protocols as IP
- SNMP v2C — provides improved efficiency and error handling
- SNMP v3 — provides improvements in security and privacy

Using the Element Manager, you can select which versions of SNMP you want the BCM450 agent to support. For more information, see Configuring SNMP settings (page 49).

Management Information Bases provide access to the managed objects of a system and specify the format of traps. BCM450 supports the following MIBs:

- RFC 1213 — MIB II
- RFC 2863 — Interface MIB
- RFC 2737 — Entity MIB
- RFC 2790 — Host MIB
- RFC 2261 — SNMP framework
- SmallSiteEvent MIB for traps

Music source and BcmAmp

This section describes the music source for your BCM450 system.

Music source

The Music on Hold and Background Music features provide music to users. For these features to function properly, a music source must be connected to the BCM.

There are three ways you can connect the music source to the BCM system:

- You can connect an external music source through an analog input to the BCM.
- You can use the IP Music feature to connect to Music Manager. Music Manager is an audio player application that resides on the BCM system and provides a streaming audio signal to the BCM system.
- You can use the IP Music feature to connect to an external music source on the data network.

You must connect the external music source to your network and it must be accessible to the BCM system. The external music source must also produce a streaming audio signal that is compatible with the BCM system.

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Select Music Manager if you are using the IP Music feature to connect to the music source available on the BCM. If you select Music Manager, you must configure the BcmAmp application before you can use it.

Select Streaming Server if you are using the IP Music feature to connect to a music source on the data network. If you select Streaming Server, you must configure the Network Device before you can use it.

For information about connecting an external music through and analog input, see *Installation—System* (NN40160-301).

BcmAmp application

The audio files loaded onto the BCM system are loaded into the same disk space that is used for CallPilot messages. Therefore, every minute of audio file loaded onto the BCM system reduces the amount of message storage space available to CallPilot by one minute. To ensure the proper operation of both Music Manager and CallPilot, the following restrictions are applied to uploading audio files.

- The maximum size of any single sound file you load onto the BCM system is 150 MB.
- The maximum amount of disk space available for Music Manager audio files is 1 GB.
- To ensure there is sufficient disk space for CallPilot, Music Manager Administration prevents you from uploading files if there is less than 1 GB of free disk space on the BCM system.

To minimize the time required to upload audio files, record the audio files as a single channel (mono) using 8-bit samples at a rate of 8 kHz.

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System configuration

Configure your BCM450 system to provide the required system functionality. A BCM450 system cannot function until it is configured.

Prerequisites to system configuration

- Ensure your BCM450 system is properly installed. For more information about installing a BCM450 system, see *Installation—System* (NN40160-301).

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- BCM450 music source configuration (page 105)
- Basic configuration testing (page 113)

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BCM450 system configuration preparation

To configure your BCM450 system most efficiently, you can download and install Element Manager on your computer. You can download the Startup Profile template, if you want to use it to set the basic parameters for your BCM450 system. A programming record template that provides the default parameters is also available for download.

Prerequisites to BCM450 system configuration preparation

- You can use the latest Element Manager version to manage all previous BCM systems that require Element Manager. You need only one instance of Element Manager on your computer.
- Element Manager has the following system requirements:
  - Windows: Windows 2000 Pro, Windows XP, or Windows Vista (Business, Ultimate, and Enterprise versions)
  - RAM: minimum 256 MB, recommended 512 MB
  - free space: 150 MB
  - A Citrix server supports access to Element Manager

BCM450 system configuration preparation navigation

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- Accessing the BCM Web page (page 26)
- Downloading and installing Element Manager (page 27)
- Downloading the Startup Profile template (page 27)
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- Viewing or modifying the Welcome panel (page 29)
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Connecting to the BCM system through the OAM port

If you must change the IP address (due to a conflict with your network), you can connect to the BCM system through the OAM port.

Prerequisites

- Before using the default address on your network, check with your system administrator. If this address conflicts with the LAN settings, you can cause network damage if you connect to the network without changing the IP address.
- Obtain a standard Ethernet cable.

Procedure steps

Step	Action
1	Connect one end of the Ethernet cable to the OAM port on the main unit.
2	Connect the other end of the Ethernet cable to the Ethernet port on your computer. The DHCP-enabled computer is assigned IP address 10.10.11.2. (255.255.255.252).

--End--

Accessing the BCM Web page

After you connect your computer to the BCM system, you can download Element Manager from the Administrator Applications area of the BCM Web page.

Prerequisites

- Ensure you connect your computer to the BCM system, either through the OAM port or through a LAN connection.

Procedure steps

Step	Action
1	Open a Web browser and enter the BCM system IP address: • If your BCM450 is installed on a network, type the address on the network in the form, http://xxx.xxx.xxx.xxx. • If your BCM450 is installed but not yet configured, connect directly to the BCM450 through the OAM port and type, http://10.10.11.1 The Enter Network Password dialog box appears.

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2 Enter the user name and password (defaults are shown):

- User name: nnadmin
- Password: PlsChgMe!

3 Click **OK**.

The Welcome to BCM Web page appears.

--End--

Downloading and installing Element Manager

Download and install Element Manager to configure and set parameters for your BCM system.

Prerequisites

- Access the BCM Web page. For more information, see Accessing the BCM Web page (page 26).

Procedure steps

Step	Action
1	From the Welcome to BCM Web page, click **Administrator Applications**. The Administrator Applications page appears.
2	From the Administrator Applications page, click **Business Element Manager**. The Element Manager panel appears.
3	On the right side of the screen, click **Download Element Manager**.
4	After Element Manager finishes downloading, double-click the application and follow the installation instructions.

--End--

Downloading the Startup Profile template

Download the Startup Profile template from the BCM Web page, if you do not have a copy of the Startup Profile template on your computer.

Prerequisites

- Access the BCM Web page. For more information, see Accessing the BCM Web page (page 26).

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Procedure steps

Step	Action
1	From the Welcome to BCM Web page, click **Administrator Applications**.
1	The Administrator Applications page appears.
2	From the Administrator Applications page, click **Startup Profile Template**.
3	The Startup Profile Template panel appears.
4	Read the information on this panel.
5	Click **Download Startup Profile Template** on the right side of the screen, and follow the instructions to download the template.

--End--

Downloading the factory default programming record

Download the factory default programming record from the BCM Web page, if you want a record of the default parameter values for the BCM system.

Prerequisites

- Access the BCM Web page. For more information, see Accessing the BCM Web page (page 26).

Procedure steps

Step	Action
1	From the Welcome to BCM Web page, click **Administrator Applications**.
1	The Administrator Applications page appears.
2	From the Administrator Applications page, click **Factory Default Programming Record**.
3	The Factory Default Programming Record panel appears.
4	Read the information on this panel.
5	Click **Download Factory Default Programming Record** on the right side of the screen, and follow the instructions to download the template.

--End--

Connecting to the BCM system

Connect to your BCM system to configure your system with Element Manager.

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Prerequisites

- Download and install Element Manager. For more information, see Downloading and installing Element Manager (page 27).

Procedure steps

Step	Action
1	Launch Element Manager.
2	From the Network menu, click **New Network Element** > **Business Communications Manager**.
3	In the **IP Address** box, type the BCM system IP address.
4	In the **User ID** and **Password** boxes, type the following information: • User ID: nnadmin • Password: PlsChgMe!
5	Click **OK**.
6	From the Network Elements list, select your BCM system IP address.
7	Ensure that the user name and password are entered.
8	Click **Connect**. You are now connected to the BCM system.

--End--

Viewing or modifying the Welcome panel

The Welcome panel displays information for the current account logged on the system. The administrator is prompted to change the password before any programming menus are accessible.

The initial Welcome panel displays:

- on the first login to the BCM by nnadmin
- when the administrator has selected the forced password change option on an account
- if the password has expired

Procedure steps

Step	Action
1	Launch Element Manager.

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2 From the Network menu, click **New Network Element > Business Communications Manager**.

3 In the **IP Address** box, type the BCM system IP address.

4 In the **User ID** and **Password** boxes, type the following information:

- User ID: nnadmin
- Password: PlsChgMe!

5 Click **OK**.

6 From the Network Elements list, select your BCM system IP address.

7 Ensure that the user name and password are entered.

8 Click **Connect**.

The Welcome panels appears.

9 If prompted to change the password, in the **Change Password** box, enter a new password.

--End--

Attention: Once the password has been changed the entire navigation tree is accessible.

Variable definitions

Variable	Value
User ID	This read-only value is the user ID you used to log on to the system.
Password	To change password, select the field and enter new password. The password must satisfy the password policy requirements for the system.

If you are not prompted to change the password the following Welcome panel information displays.

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Variable definitions

Variable	Value
Account Notifications	This read-only value displays BCM administrative messages or notifications regarding the current user.
User ID	This read-only value is the user ID you used to log on to the system.
Telset User ID	This read-only value is the user ID used to logon to the telset configuration interfaces for telephony and CallPilot applications.
Lat successful login	This read-onlyh value is the date and time that this user account was last logged in the system.

Saving the programming record

Save the programming record that contains the current settings of all or part of your Element Manager data. These files can be saved in either HTML or Excel spreadsheet format. You can access the programming record in the same way you access any other HTML file or by using Excel, version 2002 or later, for the spreadsheet format.

Prerequisites

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).
- It can take several hours to save programming records, depending on the size of the system. Nortel recommends that you save programming records during periods of low system use.
- The Save All Data selection can take up to 45 minutes to complete. Your computer must stay connected to the element during this time, as the Save All Data function is actively writing into the file specified until the function is complete.

Procedure steps

Step	Action
1	In Element Manager, select the item on the task navigation panel for which you want to save the data into an HTML report or Excel workbook. An item can be a task item, task bullet, or a folder.
2	Select **Session > device IP address > Save Programming Record > Save Selected Data**. A warning appears.

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3 Read the warning information and click **Yes**.

A Save dialog box appears.

4 In the **Save:** box choose the path where you want the file stored.

5 In the **Files of type:** box, choose the format in which you want to save the data (HTML or Microsoft Excel spreadsheet).

6 Enter a File name.

Nortel recommends that you make the current date and system name part of the file name.

7 Click **Save**.

--End--

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Basic parameters configuration

Configure basic parameters (initial parameters and startup parameters) through Telset Administration, Element Manager, or the Startup Profile template.

Prerequisites to basic parameters configuration

- Prepare your BCM450 system for configuration. For more information, see BCM450 system configuration preparation (page 25).
- For an overview of the initial parameters and startup parameters, see System parameters reference (page 123).

Basic parameters configuration navigation

- BCM450 configuration with Telset Administration (page 35)
- BCM450 configuration with Element Manager (page 41)
- BCM450 configuration with Startup Profile (page 59)

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BCM450 configuration with Telset Administration

You can use Telset Administration through a digital telephone with a two-line display to set the BCM configuration parameters.

You cannot set all the basic parameters using Telset Administration. Therefore, after configuring the initial parameters, you must use Element Manager to set the startup parameters.

Prerequisites to BCM450 configuration with Telset Administration

- Connect a digital telephone with a two-line display to your BCM system.
- For information about using Telset Administration to set parameters, see the *Telset Administration Guide* (NN40160-600).

BCM450 configuration with Telset Administration navigation

- Entering the keycode (page 35)
- Configuring the IP address (page 36)
- Configuring the modem (page 37)
- Selecting the region (page 38)
- Selecting the telephony startup template and start DN (page 38)
- Initializing voice mail (page 38)
- Creating Telset user accounts (page 38)

Entering the keycode

Enter the keycode for your BCM system to access the features.

Prerequisites

- For more detailed information about retrieving and entering the keycode for your system, see the *Keycode Installation Guide* (NN40010-301).

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Procedure steps

Step	Action
1	Select Feature 9*8 from a two-line display telephone.
2	Enter the following user ID and password: • User ID: SETNNA • Password: CONFIG The numerical values of the user ID and password are 738662 and 266344, respectively.
3	Press **OK**.
4	Press **NEXT** to scroll through the menu and select **Feature Codes**.
5	Press **OK**. The system ID (SID) appears.
6	Press **NEXT**.
7	Enter your sequence ID.
8	Press **NEXT** to scroll through the list.
9	Select **Entitlement Code**.
10	Press **SHOW** to view the current keycode.
11	Use the soft keys to modify the keycode for your system.

--End--

Configuring the IP address

Configure the BCM IP address for full network connectivity.

Procedure steps

Step	Action
1	Select Feature 9*8 from a two-line display telephone.
2	Enter the following user ID and password: • User ID: SETNNA • Password: CONFIG The numerical values of the user ID and password are 738662 and 266344, respectively.
3	Press **OK**.

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4 Press **NEXT** to scroll through the menu and select **IP Address**.

5 Press **OK**.

6 Press **CHNGE** to modify the IP settings.

The display screen shows whether DHCP is enabled or disabled.

7 Press DIS to disable DHCP or ENL to enable DHCP.

The system must reboot to enable DHCP.

8 Press IP to modify the following IP settings:

- IP Address
- Subnet Mask
- Default Gateway

These settings have no effect if the DHCP is disabled.

9 Press **Back** and select **System Restart** to reboot the system.

--End--

Configuring the modem

Configure the BCM system modem to provide connection to the system through the modem.

Prerequisites

- For more information about modem configuration, see *Configuration—Telephony* (NN40160-502).

Procedure steps

Step	Action
1	Select Feature 9*8 from a two-line display telephone.
2	Enter the following user ID and password: • User ID: SETNNA • Password: CONFIG The numerical values of the user ID and password are 738662 and 266344, respectively.
3	Press **OK**.
4	Press **NEXT** to scroll through the menu and select **Modem**.
5	Press **OK**. The display screen shows whether the modem is enabled or disabled.

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6	If the modem is disabled, press **ENL** to enable the modem.
7	If the modem is enabled, press **DIS** to disable the modem.

--End--

Selecting the region

Set the Region using Feature **PROFILE from a two-line display telephone.

For more information about using Telset Administration to set parameters, see the *Telset Administration Guide* (NN40160-600).

Selecting the telephony startup template and start DN

Set the Template and Start DN using Feature **STARTUP from a two-line display telephone.

This is available for only 15 minutes after the system starts.

For more information about using Telset Administration to set parameters, see the *Telset Administration Guide* (NN40160-600).

Initializing voice mail

Initialize your voice-mail system using Feature 983 from a two-line display telephone.

For information about using Telset Administration to initialize your voice mail system, see the *CallPilot Telephone Administration Guide* (NN40090-500).

Creating Telset user accounts

You can create Telset user accounts using Telset Administration.

Prerequisites

- You can create only Telset accounts using Telset Administration. To create Element Manager accounts, you must use Element Manager.

Procedure steps

Step	Action
1	Select Feature 9*8 from a two-line display telephone.
2	Enter the following user ID and password: • User ID: SETNNA • Password: CONFIG

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The numerical values of the user ID and password are 738662 and 266344, respectively.

3 Press **OK**

4 Press **NEXT** to scroll through the menu and select **User Accounts**.

5 Press **OK**.

The Accounts screen appears.

6 Press **CHNGE** to create an account.

7 Press **NEXT** to scroll through the list of available accounts.

8 Press **CRT** to create the account.

If you see the DEL command instead of the CRT command, the account already exists.

9 Press **BACK**.

The Accounts screen appears.

10 Press **NEXT**.

The password screen appears.

11 Press **CHNGE** to change the password.

12 Press **NEXT** to scroll through the list of available accounts.

13 Press **CHNGE** to change the password for the selected account.

14 Enter the new password for the account.

15 Enter the new password again to confirm it.

--End--

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BCM450 configuration with Element Manager

You can configure all BCM system parameters through Element Manager.

Prerequisites to BCM450 configuration with Element Manager

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).

BCM450 configuration with Element Manager navigation

- Entering the keycode (page 41)
- Configuring the IP address (page 42)
- Configuring the modem (page 43)
- Configuring the startup template for telephony services (page 43)
- Initializing voice mail (page 44)
- Entering a name for your system (page 44)
- Configuring the date and time settings (page 45)
- Configuring DHCP server settings (page 46)
- Configuring IP Phones (page 47)
- Configuring SNMP settings (page 49)
- Configuring the SNMP manager list (page 50)
- Configuring SNMP community strings (page 51)
- Configuring service access points (page 52)
- Configuring SNMP trap destinations (page 54)
- Creating user accounts (page 56)

Entering the keycode

Enter the keycode for your BCM system to access the features.

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Prerequisites

- Ensure you generate the keycode file for your BCM system and that the keycode file is stored on your computer.
- For more detailed information about retrieving and entering the keycode for your system, see the *Keycode Installation Guide* (NN40010-301).

Procedure steps

Step	Action
1	Select **Configuration > System > Keycodes**.
	The Keycodes panel appears.
2	Click **Load File**.
	The Open dialog box appears.
3	Select the keycode file for your system, and then click **Open**.

--End--

Configuring the IP address

Configure the BCM IP address for full network connectivity.

Prerequisites

- If you modify any of the attributes, the Element Manager session disconnects.

Procedure steps

Step	Action
1	Select **Configuration > System > IP Subsystem**.
2	Select the **General Settings** tab.
	It is normally selected by default.
3	From the **IP Settings** area, click **Modify**.
	The Modify IP Settings dialog box appears.
4	Configure the IP Settings attributes.
5	Click **OK**.

--End--

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Variable definitions

Variable	Value
Obtain IP address dynamically	If this is selected, the BCM system attempts to use IP address information from a DHCP server. If this is not selected, you must enter values for static IP address, IP subnet mask, and Default gateway.
IP address	The IP address of the BCM system.
IP subnet mask	The subnet mask used by the BCM system.
Default gateway	The gateway used by the BCM system.

Configuring the modem

Configure the BCM system modem to connect to the system through the modem.

Prerequisites

- For more information about modem configuration, see *Configuration—Telephony* (NN40160-502).

Procedure steps

Step	Action
1	Select **Configuration > Resources > Dial Up Interfaces**.
2	Click the **Modem Dial-In Parameters** tab.
3	Select the **Enable modem dial-in** check box to enable the modem.

--End--

Configuring the startup template for telephony services

Configure the startup telephony services to set or modify the values for the region, template, and start DN. Telephony services restarts with all telephony programming at default values. Performing a cold reset of telephony services erases all telephony programming, as well as all Voice Message mailboxes and messages.

Procedure steps

Step	Action
1	Select **Administration > Utilities > Reset**.
2	Click **Cold Reset Telephony Services**.

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The Cold Reset Telephony dialog box appears.

3 Configure the Cold Reset Telephony attributes.

4 Click **OK**.

--End--

Variable definitions

Variable	Value
Region	Specifies the startup region.
Template	Specifies the startup template.
Start DN	Specifies the startup DN. The default is 221.

Initializing voice mail

Initialize your voice mail system to enable users access voice mail features.

Prerequisites

- For more information, see the *CallPilot Manager Set Up and Operation Guide* (NN40090-300).

Procedure steps

Step	Action
1	Select **Configuration > Applications > Voice Messaging/Contact Center**.
2	Click **Launch CallPilot Manager**. The Quick Install Wizard form appears. If your voice mail system is already initialized, you do not see the Quick Install Wizard. Instead you see the CallPilot Manager: Main Menu Web page.
3	Configure the attributes on the Quick Install Wizard form.

--End--

Entering a name for your system

Enter a descriptive name for your system to identify your system on the network.

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Procedure steps

Step	Action
1	Select **Configuration > System > Identification**.
2	In the **System name** box, enter a name for your system. The system name must be a unique alphanumeric name that cannot begin with a number or hypen (-), and cannot end with hyphen or period (.)

--End--

Configuring the date and time settings

Set the date and time settings for your BCM system.

Procedure steps

Step	Action
1	Select **Configuration > System > Date and Time**. The Date and Time panel appears.
2	In the Current Date and Time panel, configure the Date and Time attributes.

--End--

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Variable definitions

Variable	Value
Date and Time source	Set to NTP if the system uses a network server to determine the correct time and date. Set to Trunk to receive time and date settings from PSTN (if available). Set to Manual to manually configure the time and date for your system.
NTP server address	If Date and Time source is set to NTP, enter an address for the server.
Synch every (s)	The number of seconds specified to elapse between contacts with the NTP server. 1-XXXX: Number of seconds between contacts with the NTP server.
NTP security mode	Select whether the NTP security mode is secured or unsecured.
Raise alarm if clock differs by at least (s)	The number of discrepancy seconds specified that must occur before the system notifies you of a time difference from the NTP server, if the system automatically checks with the NTP server.
NTP key ID	ID for accessing the NTP.
NTP key string	Control key corresponding to ID for accessing the NTP.
Date and time	Use the calendar to select the correct date and time.
Time zone	Select the time zone for this system.

Configuring DHCP server settings

Configure the DHCP server settings on your BCM main unit.

Procedure steps

Step	Action
1	Select **Configuration > Data Services > DHCP Server**.
2	Select the **General Settings** tab.
3	Configure the attributes.

--End--

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Variable definitions

Variable	Value
DHCP server is	Select Enabled - IP Phones Only, Enabled - All Devices, or Disabled from the list.
IP domain name	The domain name of the network.
Primary DNS IP address	Specify the IP addresses of the primary DNS server in a valid dot format. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
Secondary DNS IP address	Specify the IP addresses of the secondary DNS server in a valid dot format. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
WINS server address	Specify the IP address of the WINS server. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
WINS node type	Specify a client WINS node type. The BCM system automatically sets this value to H-node on all DHCP clients. This setting configures the DHCP client PCs to use P-node name resolution before resorting to B-node name resolution. Use caution if you change this attribute.
Default gateway	Specify the IP address of the default next-hop router. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
Lease time	Specify the time, in seconds, for an address assignment until the client lease expires. The default is 259 200 seconds (72 hours).

Configuring IP Phones

Configure the IP Phones for your BCM system to enable their full functionality.

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Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	From the **Configured Device** column, select **IP Sets**. The Details for Module area appears in the lower pane with the IP Terminal Global Settings tab as the default.
3	Configure the IP Terminal Global Settings attributes.
4	To automatically configure IP Phones with DNs assigned: • Select the **Enable registration** check box. • Select the **Enable global registration password** check box. • Leave the **Global password** box blank. • Select the **Auto-assign DNs** check box. • After the IP Phones are operational, clear the **Enable registration** check box.

--End--

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Variable definitions

Variable	Value
Enable registration	Select this check box to allow new IP clients to register with the system. Remember to clear this check box after you finish registering the new telephones.
Enable global registration password	To require the installer to enter a password after IP telephones are configured and registered to the system, select this box. If this box is not selected (disabled), a valid Telset user ID and password is required to register IP phones.
Global password	If you select the Enable Global Registration Password check box, enter the password the installer enters on the IP telephone to connect to the system. If this check box is empty, no password prompt occurs during registration.
Auto-assign DNs	If you select this check box, the system assigns an available DN as an IP terminal requests registration. It does not prompt the installer to enter a set DN. If this check box is empty, the installer receives a prompt to enter the assigned DN during the programming session.
Advertisement/Logo	Any information in this box appears on the display of all IP telephones. For example, your company name or slogan (24 characters in length).

Configuring SNMP settings

Configure SNMP settings to either enable or disable the SNMP agent, security level, and version.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **General** tab. It is normally selected by default.
3	From the **SNMP Settings** area, click **Modify**. The Modify SNMP Settings dialog box appears.
4	Configure the attributes for **Modify SNMP Settings.**
5	Click **OK**.

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--End--

Variable definitions

Variable	Value
Enable SNMP Agent	Choose whether to enable or disable the SNMP agent by selecting (or not selecting) the check box.
Minimum required security	Select the minimum required security for SNMP from the list.Options are: noAuthNoPriv or authNoPriv
SNMP Version Support	Select the SMNP version support from the list. Options are: V1-V2-V3 V3 V2-V1

Configuring the SNMP manager list

Configure the SNMP manager list by specifying one or more manager IP address.

Prerequisites

- Use the SNMP manager list to specify IP addresses that can connect to the SNMP agent.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **General** tab. It is normally selected by default.
3	In the **SNMP Manager List** area, click **Add**. The Add Manager dialog box appears.
4	In the **Manager IP Address** box, enter the IP address. The IP address must correspond to the PC where the SNMP manager software is installed. Do not use the dynamic IP address that the PC receives when the dial-up link activates (when the BCM450 initiates dialing). Using the dynamic IP address causes the removal of the required static route. The format for the IP address is X.X.X.X:P, where P is the port.Setting the IP address to 0.0.0.0 authorizes all SNMP managers to query the system.
5	Click **OK**.

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6	Repeat step 3 to step 5 to add another manager IP address.

--End--

Deleting an SNMP manager

You can delete an SNMP manager if it is no longer required.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **General** tab. It is normally selected by default.
3	In the **SNMP Manager List** area, select a manager in the IP Manager IP address table. Click **Delete**. A confirmation message appears.
4	Click **Yes** to confirm the deletion.

--End--

Configuring SNMP community strings

Configure SNMP community settings to add a community string and specify the type of access. An SNMP community string is a value, similar to a user ID or a password, that allows access to a device's statistics. SNMP managers send a community string along with each SNMP request. If the community string is correct, the BCM450 responds with the requested information. If the community string is incorrect, the BCM450 discards the request and does not respond. Community strings are used for SNMP v1 and v2C only.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **Community Strings** tab.
3	Click **Add**. The Add Community String dialog box appears.
4	Configure the Add Community String attributes.
5	Click **OK**.

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6	Repeat step 3 to step 5 to add more community strings.

--End--

Variable definitions

Variable	Value
Community string	Enter the name used as a key to uniquely identify an individual community entry on the SNMP agent.
Type of access	Specify the read and write access for this community. Available options are Read-Only and Read/Write.

Deleting SNMP community strings

You can delete an SNMP community string if it is no longer required.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **Community Strings** tab.
3	In the Community Strings table, select the community string that you want to delete.
4	Click **Delete**. A confirmation message appears.
5	Click **Yes** to confirm the deletion.

--End--

Configuring service access points

Service access points are associated with the enhanced security and privacy features of SNMP v3. The Service Access Point tab is not visible if SNMPv3 is not selected on the SNMP General Settings tab. You can add, modify, and delete service access points.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.

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2 Select the **Service Access Points** tab.
The Service Access Points tab appears.

3 Click **Add**.

The Add Service Access points dialog box appears.

4 Configure the Add Service Access Points attributes.

5 Click **OK**.

--End--

Variable definitions

Variable	Value
User name	Enter the name of the user associated with the service access point.
Authentication Protocol	Select the authentication protocol. Options are: None, MD5, SHA.
Type of Access	Select the type of access. Options are: Read Only and Read/ Write.
Encryption Protocol	Select the encryption. Options are: None, DES, 3DES, AES.
Engine ID	Enter an engine ID when you add a user that will be used for SNMP v3 communications. The engine ID is made up of hexidecimal digits with a colon separating each digit. Leave the engine ID blank when you add a user that will have access to the MIB, or in the case of SNMP v3 MIB queries.
Authentication Pass Phrase	Enter the Authentication pass phrase for the service access point. Press the Tab key when you have entered the phrase.
Privilege Pass Phrase	Enter the Privilege pass phrase for the service access point. Press the Tab key when you have entered the phrase.

Deleting service access points

You can delete service access points.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **Service Access Points** tab. The Service Access Points tab appears.

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3	In the **Service Acess Points table** select a service access point.
4	Click **Delete.** A confirmation message appears.
5	Click **Yes**.

--End--

Configuring SNMP trap destinations

An SNMP trap is a signal that tells the SNMP manager that an event has occurred on the system. The SNMP system enables SNMP traps to be generated based on all or some events and alarms generated on the BCM450 system. Any information that is displayed in the Alarms panel can generate an SNMP trap.

BCM450 alarms that meet the SNMP trap criteria are forwarded to the SNMP trap reporting interface according to defined trap community strings. SNMP trap notifications are displayed in your SNMP trap software.

SNMP traps are generated by the BCM450 if you have enabled SNMP for specific BCM450 alarms. You configure SNMP settings using the Alarm Settings task in the Element Manager.

Attention: You can configure and administer SNMP trap destinations in both the Configuration tab and the Administration tab of the Element Manager. This allows operators who manage BCM450 faults to configure SNMP trap destinations without having to access the SNMP settings on the Configuration panel. SNMP must be enabled on the SNMP General panel if you want to configure and use SNMP trap destinations from the SNMP Trap Destinations panel on Administration panel.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **SNMP Trap Destinations** tab. The SNMP Trap Destinations tab appears.
3	Click **Add**. The Add Trap Destinations dialog box appears.
4	Configure the Add Trap Destinations attributes.
5	Click **OK**.

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--End--

Variable definitions

Variable	Value
Name	Enter a name for the trap.
Host	Enter the IP address of the trap destination.
Port	Enter the UDP port number from which the trap will be sent. The default value is 162.
SNMP version	Select the version of the SNMP Agent for the trap. Options are: v1/v2C, and v3.
Community String	Enter the community string to use for the SNMP trap.
User Name	For v3 only, enter the user name for the SNMP trap.

Viewing and modifying SNMP trap destinations

Once you have configured SNMP settings, you can view and administer SNMP trap destinations.

Attention: You can configure and administer SNMP trap destinations in both the Configuration tab and the Administration tab of the Element Manager. This allows operators who manage BCM450 faults to configure SNMP trap destinations without having to access the SNMP settings on the Configuration panel. SNMP must be enabled on the SNMP General panel if you want to configure and use SNMP trap destinations from the SNMP Trap Destinations panel on Administration panel.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **SNMP Trap Destinations** tab. The SNMP Trap Destinations tab appears.
3	In the **Trap Destinations**table, select a trap destination.
4	Click **Modify**.
	The Add Trap Destinations dialog box appears.
5	Configure the Modify Trap Destinations attributes.
6	Click **OK**.

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--End--

Variable definitions

Variable	Value
Name	Enter a name for the trap.
Host	Enter the IP address of the trap destination.
Port	Enter the UDP port number from which the trap will be sent. The default value is 162.
SNMP version	Select the version of the SNMP Agent for the trap. Options are: v1/v2C, and v3.
Community String	Enter the community string to use for the SNMP trap.
User Name	For v3 only, enter the user name for the SNMP trap.

Deleting SNMP Trap Destinations

You can delete SNMP Trap Destinations.

Procedure steps

Step	Action
1	Select **Configuration > Administrator Access > SNMP**.
2	Select the **SNMP Trap Destinations** tab. The SNMP Trap Destinations tab appears.
3	In the **SNMP Trap Destinations**table, select a trap destination.
4	Click **Delete.** A confirmation message appears.
5	Click **Yes**.

--End--

Creating user accounts

Create user accounts to allow specific user to access the BCM system.

Procedure steps

Step	Action

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1. Select **Configuration > Administrator Access > Accounts and Privileges**.
2. Select the **View by Accounts** tab.
3. Click **Add** to add a user account.

   The Add Account dialog box appears.
4. Configure the Add Account attributes.
5. Click **OK**.
6. Repeat step 3 to step 5 to create more user accounts.

--End--

Variable definitions

Variable	Value
Description	Enter a description for this account.
User ID	Enter a descriptive name for the user or the user function.
Password	Enter a password for this account.
Telset user ID (numeric)	If the user performs administration through the Telset interface, enter a number for the user ID.
Telset password (numeric)	Enter a password for the Telset User ID.
Modem Callback Number	If Callback is required, enter the number to which the system calls back to verify the dial-up user access.
Modem Callback Passcode	This is the code the system uses to confirm the callback is legitimate.
ISDN Callback Number	If ISDN Callback is required, enter the number to which the system calls back to verify the dial-up user access.
Change Password On Login	Select this check box to force the user to change the password upon first login.
Change Password On Login Telset	Select this check box to force the user to change the Telset password upon first login.

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BCM450 configuration with Startup Profile

An experienced administrator uses the Startup Profile tool to customize a template with common BCM system parameters. The administrator uses this template to configure a single system or multiple systems.

Prerequisites for BCM450 configuration with Startup Profile

- The Startup Profile works only on a BCM system with no keycodes loaded. After the keycodes are loaded, the Startup Profile does not work. This condition prevents unintentional overwriting of the parameters of a configured system.
- You require a computer with a USB port and Microsoft Excel 2000 or newer.
- You require a portable USB storage device compatible with USB 1.1 (formatted for FAT32).
- Loading the Startup Profile adds approximately 5 minutes to the time for the BCM system to boot. After you successfully apply the Startup Profile, the BCM system automatically reboots to complete the BCM system configuration. After the BCM system reboots, the Startup Profile is fully loaded.

BCM450 configuration with Startup Profile navigation

- Setting the Excel macro security level (page 59)
- Customizing a Startup Profile for your system (page 60)
- Loading the Startup Profile data onto your BCM system (page 61)

Setting the Excel macro security level

The Startup Profile template uses macros to perform certain functions. You must set your Excel macro security level to medium or low to enable the macros.

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Prerequisites

- You require a copy of the Startup Profile template. For more information, see Downloading the Startup Profile template (page 27).

Procedure steps

Step	Action
1	Open Microsoft Excel.
2	From the **Tools** menu, select **Macro**.
3	Select **Security**.
4	Select **Medium** or **Low**.
5	Click **Ok**.
6	Exit from Excel.
7	Open the Startup Profile template (in Excel).
8	Enable macros if you are prompted.

--End--

Customizing a Startup Profile for your system

Customize a Startup Profile for your BCM system to facilitate the setting of the BCM parameters.

Prerequisites

- You require a copy of the Startup Profile template. For more information, see Downloading the Startup Profile template (page 27).
- You cannot copy and paste data between cells in the Startup Profile. If you attempt this, the data validation within the spreadsheet becomes corrupt. If corruption occurs, download another copy of the Startup Profile template from the BCM main unit.
- Never edit the Startup Profile (.sps file) directly; always use the Startup Profile editor to make changes.

Procedure steps

Step	Action
1	Open the Startup Profile template (Microsoft Excel template). For instructions about using the Startup Profile template, see the Usage Instructions tab.

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2 Click the StartupProfileTemplate tab to begin entering information in the Startup Profile template.

3 Enter your BCM system ID in the System ID box in the Startup Profile template.

The system ID is on the box of the main unit and on the main unit itself. If you enter the wrong system ID, the Startup Profile does not work with your system.

4 Click the large button at the top of the Startup Profile template to save a version of the Startup Profile (.sps file) and a version of the Startup Profile editor (Excel spreadsheet) on your computer.

The file names for the Startup Profile editor and the Startup Profile consist of the system ID followed by the appropriate extension.

5 Enter the remaining information into the Startup Profile editor that you want loaded onto the BCM main unit.

The Startup Profile editor contains explanations of the various parameters. Click the cell where you want to enter information, and the Help text appears.

6 You can specify which parameters to load onto your system by selecting Apply.

If you do not want to load certain parameters, select Ignore.

7 After you enter all the information, click the large button at the top of the Startup Profile template to save a version of the Startup Profile (.sps file) and a version of the Startup Profile editor (Excel spreadsheet) on your computer.

8 Exit from Microsoft Excel.

9 Insert the USB storage device into the USB port of the computer.

10 Copy the Startup Profile (.sps file) to the root directory of the USB storage device.

11 To load your keycodes using the Startup Profile, copy the keycode file to the root directory of the USB storage device.

The name of the keycode file on the USB storage device must exactly match the file name you entered in the Startup Profile editor.

12 Remove the USB storage device from the USB port of the computer.

The Startup Profile is now stored on the USB storage device.

--End--

Loading the Startup Profile data onto your BCM system

Load the Startup Profile data onto your BCM system to set the selected BCM system parameters.

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Prerequisites

- Customize the startup profile template for your system. For more information, see Customizing a Startup Profile for your system (page 60).
- Loading the Startup Profile adds approximately 5 minutes to the time for the BCM system to boot.
- Make sure the bootup sequence is complete before removing the USB storage device from the BCM system.
- Do not use the Startup Profile on a functional BCM system because the parameter values in the Startup Profile replace those on the system.

Procedure steps

Step	Action
1	Disconnect the power supply from the main unit.
2	Insert the USB storage device into the USB port on the main unit. If the BCM system has a UPS, insert the USB storage device into the Linux-compatible USB hub.
3	Connect the power supply to the BCM system. The BCM automatically detects the Startup Profile file and loads the information during the bootup sequence. After the BCM system reboots, the Startup Profile is fully loaded.
4	If the status LED flashes red (error), view the log file (written to the USB storage device) for a description of the Startup Profile errors. If no errors exist, the BCM system automatically reboots to complete the system configuration. After the reboot finishes, the power and status LEDs are solid green.
5	Remove the USB storage device from the USB port on the BCM or the USB hub.

--End--

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BCM450 internal resources configuration

This section provides information about configuring the internal resources on your BCM main unit. The internal resources include IP trunks, IP sets, and applications resources.

Prerequisites to BCM450 internal resources configuration

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).
- Ensure the required number of IP trunks, IP sets, and applications resources are part of your keycode.
- For information about configuring internal resources through Telset Administration, see *Telset Administration Guide* (NN40020-604).
- For information about system capacity, see System capacity reference (page 135).

BCM450 internal resources configuration navigation

- Configuring IP trunks (page 63)
- Configuring IP sets and applications (page 64)

Configuring IP trunks

The BCM system automatically configures your IP trunks. You can modify this default configuration to re-organize the line numbers on your system.

To configure IP trunk modules through Telset Administration, select ****Config > Hardware > Main unit > IP Trunks**.

Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.

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2 In the **Modules** section, select the internal **IP Trunks** that you want to configure.

3 Click **Configure** to display the Configure dialog box.

The system automatically assigns values that are appropriate for your system.

4 Enter the values for the required variables.

5 Click **OK**.

--End--

Variable definitions

Variable	Value
Module type	This read-only value is the type of module allocated to this resource. In this case the value is IP Trunks.
Note	A read-only value that provides information relevant to IP trunk configuration.
Start Line	The first line number in the sequence of consecutive lines assigned to your IP Trunks. The list of line numbers for IP trunks must be consecutive. If the available line numbers are segmented and the necessary number of consecutive line numbers does not exist, you receive an error message and the system does not assign the line numbers. If this occurs, you must remove other lines in the system and restart line numbering for devices so the lines numbers are not segmented and enough consecutive groups are obtained for all devices.
Total Number of Lines	The total number of lines that you want to assign to your IP Trunk resource.

Configuring IP sets and applications

The BCM system automatically configures your IP sets and applications resource DNs. You can modify this default configuration to re-organize the DNs on your system.

To configure IP sets and applications resources through Telset Administration, select ****Config > Hardware > Main unit > IP Sets**.

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Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	In the **Modules** section, select the internal **IP sets** or **Applications** that you want to configure.
3	Click **Configure** to display the Configure dialog box. The system automatically assigns values that are appropriate for your system.
4	Enter the values for the required variables.
5	Click **OK**.

--End--

Variable definitions

Variable	Value
Module type	This read-only value is the type of module allocated to this resource. In this case the value is IP Sets or Applications.
Note	A read-only value that provides information relevant to application resource configuration. This variable is available only when you select applications.
Start DN	The lowest DN in the range of DNs assigned to your resource. The DNs in the range can be consecutive or non-consecutive.
Number of DNs to add	The total number of DNs that you want to assign to your IP Set or Applications resource.
Public received digits/OLI	The public received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the public network. This number is usually the same as the DN.
Private recieved digits/OLI	The private received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the private network. This number is usually the same as the DN.
Assign target lines	Select this checkbox to assign target lines to your DNs.

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BCM450 MBM and legacy Norstar configuration

This section provides information about configuring and deconfiguring the media bay modules (MBM) and legacy Norstar modules in your BCM main unit.

Prerequisites to BCM450 MBM and legacy Norstar configuration

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).
- For information about configuring internal resources through Telset Administration, see *Telset Administration Guide* (NN40020-604).
- You can add a FEM in the main unit only to connect legacy Norstar modules. A FEM does not function in an expansion unit.
- There must be enough DNs available in the system to populate the entire MBM being configured, or you cannot configure the MBM and the MBM does not function.
- There must be enough consecutive line numbers available in the system to populate the entire MBM, or you cannot configure the MBM and the MBM configuration does not change.
- The target lines assigned to the DNs are auto-selected by the system and do not need to be consecutive. The system attempts to find sufficient free target lines to assign one to each allocated DN.
- Configure the R2MFC MBM as a DTI-PRI MBM with additional configuration requirements to set the attributes of the PRI protocol such that the device operates as an R2MFC module.

BCM450 MBM and legacy Norstar configuration navigation

- Configuring main unit MBMs (page 68)
- Configuring legacy Norstar modules (page 69)
- Configuring expansion unit MBMs (page 71)
- Deconfiguring MBMs and Norstar modules (page 73)

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Configuring main unit MBMs

Configure main unit media bay modules (MBM) through a two-stage process. First, identify the type of installed MBMs to the BCM system, and then configure the required variables. The BCM system suggests default values for your MBM. You can modify the default values depending on your system preference.

To configure main unit MBMs through Telset Administration, select ****Config > Hardware > Main unit > MBMs**.

Prerequisites

- If you do not configure the MBM, it cannot function in your system.
- Set the MBM dip switches to factory default values (all on). In the case of a FEM, the dip switches on the FEM must be defaulted such that all six ports on the FEM are enabled. If you install an MBM in the main unit with a different dip switch configuration, the MBM will not function.
- For information about installing media bay modules (MBM), see *Installation — Hardware* (NN40020-302).
- For information about configuring a FEM, see Configuring legacy Norstar modules (page 69).

Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	In the **Modules** section, double-click **Configured Device** in the row of the MBM to configure.
3	From the list, select the type of MBM that you installed in this location in the main unit.
4	Click **Configure** to display the Configure dialog box. The system suggests values that are appropriate for your system.
5	If required, modify the suggested values to customize your system.
6	Click **OK**. Even if you are not modifying the default configuration, you must click OK to activate the MBM with the assigned values.

--End--

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Attention: You must have sufficient resources to configure MBMs. If sufficient resources (DNs available on system, consecutive line numbers) do not exist to configure an MBM, you receive an error message. The MBM and the entry configuration revert back to Empty/None.

Variable definitions

Variable	Value
Module type	This read-only value is the type of module allocated to this resource. In this case the value is the type of MBM.
Start DN	The lowest DN in the range of DNs assigned to your resource. The DNs in the range can be consecutive or non-consecutive.
Public received digits/OLI	The public received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the public network. This number is usually the same as the DN.
Private recieved digits/OLI	The private received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the private network. This number is usually the same as the DN.
Assign target lines	Select this checkbox to assign target lines to your DNs.
Start Line	The first line number in the sequence of consecutive lines assigned to your MBM.
Attention: The variables that appear in the configure dialog box differ depending upon the type of MBM you choose to configure.	

Configuring legacy Norstar modules

Configure legacy Norstar modules with your FEM to use the functionality of your legacy Norstar modules. The BCM system suggests default values for your modules. You can modify this default configuration depending on your system preference.

To configure legacy Norstar modules through Telset Administration, select ****Config > Hardware > Main unit > MBMs > FEM**.

Prerequisites

- A legacy Norstar module must be connected to your BCM system through a FEM installed in the main unit.
- You cannot configure a FEM, instead you must configure the sub-modules (legacy Norstar modules) listed below the FEM.
- If you do not configure the legacy Norstar module, it cannot function in your system.

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Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	In the **Modules** section, double-click **Configured Device** in the location row where you installed your FEM.
3	From the **Configured Device** list, select **FEM**. A list of locations for legacy Norstar modules appears below the FEM location.
4	Select the legacy Norstar module location (listed below the FEM) that you want to configure.
5	Double-click **Configured Device** for the selected Norstar module.
6	From the **Configured Device** list, select the type of Norstar module connected to this FEM location. If you select Norstar TM, the Configure button appears dimmed. You must select the type of Norstar TM, for example Loop TC, from the Configured Device list before you can configure it.
7	Click **Configure** to display the Configure dialog box. The system suggests values that are appropriate for your system.
8	If required, modify the suggested values to customize your system.
9	Click **OK**. Even if you are not modifying the default configuration, you must click OK to activate the module with the assigned values.
10	Repeat step 4 to step 9 for each Norstar module connected to your FEM.

Attention: You must have sufficient resources to configure MBMs. If sufficient resources (DNs available on system, consecutive line numbers) do not exist to configure an MBM, you receive an error message. The MBM and the entry configuration revert back to Empty/None.

--End--

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Variable definitions

Variable	Value
Module type	This read-only value is the type of module allocated to this resource. In this case the value is the type of MBM.
Start DN	The lowest DN in the range of DNs assigned to your resource. The DNs in the range can be consecutive or non-consecutive.
Public received digits/OLI	The public received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the public network. This number is usually the same as the DN.
Private recieved digits/OLI	The private received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the private network. This number is usually the same as the DN.
Assign target lines	Select this checkbox to assign target lines to your DNs.
Start Line	The first line number in the sequence of consecutive lines assigned to your MBM.

Configuring expansion unit MBMs

Configure expansion unit media bay modules (MBM) through a two-stage process. First, you identify the type of installed MBMs to the BCM system, and then you configure the required variables. The BCM system suggests default values for your MBM. You can modify this default configuration depending on your system preference.

To configure MBMs in the expansion unit through Telset Administration, select ****Config > Hardware > Main Unit > Expansion**.

Prerequisites

- If you do not configure the MBM, it cannot function in your system.
- You can force a specific dip switch setting for your MBMs. Nortel recommends that you leave the dip switches in the default position. The DIP switches in an expansion unit must be set to select a valid module number.
- A FEM does not function in an expansion unit. A FEM must be installed in the main unit.

Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	In the **Modules** section, double-click **Configured Device** in the row where Expansion 1 is located.

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3 Select **MBM-6**.

You will now see a list of slots in the Locations row for the expansion.

4 From the list, select the type of MBM that you installed in this location in the expansion unit.

5 Click **Configure** to display the Configure dialog box.

The system suggests values that are appropriate for your system.

6 If required, modify the suggested values to customize your system.

7 Click **OK**.

Even if you are not modifying the default configuration, you must click OK to activate the MBM with the assigned values.

--End--

Attention: You must have sufficient resources to configure MBMs. If sufficient resources (DNs available on system, consecutive line numbers) do not exist to configure an MBM, you receive an error message. The MBM and the entry configuration revert back to Empty/None.

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Variable definitions

Variable	Value
Module type	This read-only value is the type of module allocated to this resource. In this case the value is the type of MBM.
Start DN	The lowest DN in the range of DNs assigned to your resource. The DNs in the range can be consecutive or non-consecutive.
Public received digits/OLI	The public received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the public network. This number is usually the same as the DN.
Private recieved digits/OLI	The private received digits/OLI (outgoing line identification) are the digits that display on the telephone called from this DN over the private network. This number is usually the same as the DN.
Assign target lines	Select this checkbox to assign target lines to your DNs.
Start Line	The first line number in the sequence of consecutive lines assigned to your MBM.
DIP	The DIP switch configuration for the installed MBM. Nortel recommends that you leave the MBM dip switches in the default position (all set to on). This variable only applies to an MBM installed in the expansion unit.The DIP switches must be set in an expansion unit.

Deconfiguring MBMs and Norstar modules

Deconfiguring a previously configured device removes assigned resources to that device. However, target lines will remain assigned to the same bus. If that bus is then re-configured with DNs , those target lines will be assigned to those DNs. Refer to “Directory numbers” on page 16 for more information.

Prerequisites

- If a currently configured MBM is changed to Empty/None or changed to a different MBM type, all associated provisioned resources are freed and that MBM is rendered deconfigured and inoperable.
- The line numbers against a T-interface loop cannot be deleted. To remove the line numbers assigned to a BRI, you must remove the BRI device.

Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	In the **Modules** section, select the MBM or legacy Norstar module to deconfigure.

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3 Click **Deconfigure**.

The Deconfigure confirmation box appears.

4 Click **OK** to confirm deconfiguration of the selected MBM or legacy Norstar module.

--End--

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BCM450 trunk module configuration

Configure the trunk module parameters to define the line properties for your BCM system.

Prerequisites to BCM450 trunk module configuration

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).
- You can access trunk module configuration through Telset Administration using **CONFIG > Hardware.

NavigationBCM450 trunk module configuration navigation

- Configuring the trunk module parameters (page 75)
- Configuring call-by-call service selection (page 76)
- Provisioning module lines and loops (page 76)

Configuring the trunk module parameters

Configure the trunk module parameters to define the line properties for your BCM system.

Prerequisites

- For more information about the configurable parameters for a trunk module, see Trunk module parameters (page 126).

Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	On the **Modules** panel, click the trunk module entry that you want to view.
3	On the **Trunk Module Parameters** tab, review the settings to ensure they support the type of line function provided from the Central Office (CO).

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--End--

Configuring call-by-call service selection

Configure the PRI Call-by-call Service Selection, which is region-specific to North America, for a DTM set to a PRI Module type.

Prerequisites

- Applies to modules that support T1, PRI, or DASS2.
- Configure the trunk module parameters. For more information, see Configuring the trunk module parameters (page 75).

Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	On the **Modules** panel, click the trunk module entry that you want to view.
3	From the **Call-by-Call Service Selection** tab, set the attributes.

--End--

Variable definitions

Variable	Value
Service Type Foreign Exchange	Define the applicable services for the protocol defined on the Module record.
Translation Mode	Define how the incoming digits get mapped to line numbers (target lines or DISA/AUTO DNs) within the system.
Translate All Calls To	Enter the appropriate information for the mode chosen.

Provisioning module lines and loops

Configure the module lines and loops for your BCM system.

Prerequisites

- Configure the trunk module parameters. For more information, see Configuring the trunk module parameters (page 75).

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Procedure steps

Step	Action
1	Select **Configuration > Resources > Telephony Resources**.
2	On the **Modules** panel, click the trunk module entry that you want to view. The panel that appears depends on the type of module that is selected.
3	Provision the lines, virtual channels, and loops for your module. • The Provision Line tab panel is used for all trunks except DPNSS and BRI loops. • The DPNSS module shows the Provision Virtual Channels tab panel. • BRI loops require an extra step, so the Provision Loops tab panel appears after a BRI module is selected.

--End--

Variable definitions

Variable	Value
Provision Lines tab	
Line <line number>	This is a list of the lines assigned to the module.
Provisioned <check box>	If the check box is selected beside a line, that line is available for call traffic.
Provision Virtual Channels tab	
Virtual Channel <read-only>	A virtual channel assigned to the DPNSS module.
Provisioned <check box>	If the check box is selected beside a channel, that channel is available for call traffic.
Provision Loops tab	
Loop <loop-number>	These are the loop numbers assigned to the selected BRI module. Modules have four loops, but only loops designated as T-loops require provisioning.
Provisioned <check box>	If the check box is selected beside a loop, that loop has lines that can be provisioned.

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Dial-up resources configuration

On the Dial-out Interfaces panel you can add, configure, and control the connection status of both ISDN and Modem dial-out interfaces. These interfaces can be used for the Automatic dial-out service.

Consider the following guidelines when using remote dial-in:

- The remote dial-in for administration and the backup WAN link share the same modem. If a remote administration user is connected while the primary link breaks, the automatic backup function does not occur.
- While using the back-up interface, BCM always calls. BCM does not answer an incoming call from a router on the V.92 interface.

Dial-up resources configuration navigation

- ISDN interface management (page 79)
- ISDN interface connection or disconnection (page 81)
- ISDN channel parameters configuration (page 82)
- Modem interface management (page 84)
- Modem interface connection or disconnection (page 86)
- Modem dial-out link parameters configuration (page 87)
- ISDN dial-in parameters configuration (page 90)
- Automatic dial-out interface configuration (page 95)
- Dial-up interfaces as primary connections (page 97)
- Static routes for dial-out configuration (page 99)

ISDN interface management

This section provides information about managing ISDN interfaces.

ISDN interface management navigation

- Adding an ISDN interface (page 80)
- Enabling an ISDN interface (page 80)

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- Disabling an ISDN interface (page 81)
- Deleting an ISDN interface (page 81)

Adding an ISDN interface

Use the following procedure to add an ISDN interface to the BCM450 system.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, click **Add**. The **Add Dial up Interface** dialog box appears.
3	Select **ISDN** from the Interface type drop-down list.
4	Enter a logical name in the **Interface name** field.
5	Select the **Automatic Dialout** check box to use this interface for scheduled services.
6	Click **OK**. The interface appears in the Dial-out Interfaces table.

--End--

Enabling an ISDN interface

An interface must be enabled to function as a backup connection. If the BCM450 experiences a primary connection failure, it will dial-out using the dial-up interface configured as the backup. Use the following procedure to enable and ISDN interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, select the ISDN interface.
3	On the **Channel Characteristics** tab, enter the **Dial-out number** for the ISDN interface.
4	On the **Dial-out Interface** tab, select the **Enable** check box next to the ISDN interface to enable.

Attention: BCM450 only allows the configuration of two ISDN auto-dialout interfaces. When both of these interfaces are enabled ISDN dial-in is disabled.

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--End--

Disabling an ISDN interface

Use the following procedure to disable and ISDN interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interface** tab, clear the **Enable** check box next to the interface.

--End--

Deleting an ISDN interface

Use the following procedure to delete an ISDN interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces > Dial-out interfaces** tab.
2	Clear the **Enable** check box.
3	Click the ISDN interface you want to delete.
4	Click **Delete**. A confirmation dialog box appears.
5	Click **Yes**. The interface is deleted.

--End--

ISDN interface connection or disconnection

Interfaces can be connected manually, or they can be triggered to connect by auto dial-out, see Adding an automatic dial-out interface (page 96). Auto dial-out routes can not be added if the interface is already manually connected, unless the interface is already connected with auto dial-out routes configured.

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ISDN interface connection or disconnection navigation

- Connecting an ISDN interface (page 82)
- Disconnecting an ISDN interface (page 82)

Connecting an ISDN interface

Use the following procedure to connect an ISDN interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, select the interface to connect.
3	Select the **Enable** check box.
4	In the **IP Address Specification** tab, specify the remote IP address to which to connect.
5	In the top panel, click **Connect**.

--End--

Disconnecting an ISDN interface

Use the following procedure to disconnect an ISDN interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab select the interface to disconnect.
3	Click **Disconnect**. A confirmation dialog box appears.
4	Click **Yes**.

--End--

ISDN channel parameters configuration

This section provides information about configuring ISDN channel parameters.

ISDN channel parameters configuration navigation

- Configuring parameters for an ISDN channel (page 83)

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- Configuring the ISDN Link Parameters (page 83)

Configuring parameters for an ISDN channel

Use the following procedure to configure the parameters for an ISDN channel.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	Click the ISDN interface to configure.
3	Select the **Channel Characteristics** tab.
4	Double-click the field to modify.
5	Make the necessary changes.

--End--

Variable definitions

Variable	Value
Channel	There are two ISDN channels available for dial out, ISDN1 and ISDN2. These channels are assigned automatically.<read-only>
Dial-out Number	Enter the primary phone number to use to make an ISDN connection. If needed, include area codes and all necessary digits to dial an external number. The phone number must contain only numerical digits (no alphabetical or other characters are allowed). Default: blank <numeric string>
Line Type	Select either 64K Digital or 56K Digital line. BCM450 ISDN supports two types of Unrestricted Digital Information (UDI) bit streams: UDI, and UDI-56. With UDI, data is transmitted at 64kbps (64K Digital). With UDI-56, a 1 bit is inserted in the eighth bit position of each B-channel time slot while the other 7 bits form the 56kbps channel (56K Digital). Default: 64K Digital
Negotiate Line Type	Choose whether the system selects a line with a slower speed if unable to connect at the previously set speed. Default: enabled

Configuring the ISDN Link Parameters

Use the following procedure to configure ISDN link parameters.

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Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	Click the ISDN interface to configure.
3	Click the **Link Parameters** tab. The Link Parameters panel appears.
4	Configure the ISDN Link Parameters.

--End--

Variable definitions

Variable	Value
PPP Settings	
IdleTime out (s)	The interval after which the ISDN interface disconnects when there is no traffic. Default: 90 seconds <0-36000> **Note**: A value of 0 makes the connection persistent.
Maximum receive unit	The maximum size of the packets that can be received. <128_1500> Default: 1500
Maximum transmission unit	The maximum size of the packets that can be received. <128_1500> Default: 1500
IP header compression	Enable or disable IP header compression. **Note**: This feature must be enabled at both ends of the connection. Default: enabled
Software compression	Enable or disable software compression. When enabled, all dial-up connections use BSD Scheme for compression. Default: disabled
Access Setting	
Authentication	Select the authentication type for the link. Default: CHAP
Dial-Out User Name	Select the username used for authenticating to the remote end.

Modem interface management

BCM supports one V.34 modem connection to, and from, the BCM450.

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Modem interface management navigation

- Adding a modem interface (page 85)
- Enabling a modem interface (page 85)
- Disabling a modem interface (page 86)
- Deleting a modem interface (page 86)

Adding a modem interface

Use this procedure to add a modem interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces** > **Dial-out Interfaces** tab.
2	Click **Add**. The **Add Dial Up Interface** dialog box appears.
3	Select **Modem** from the **Interface type** drop-down list.
4	Enter a logical name in the **Interface name** field.
5	Select the Automatic dialout check box to use this interface for scheduled service.
6	Click **OK**. The interface appears in the Dial-out Interfaces table.

--End--

Enabling a modem interface

An interface must be enabled to function as a backup connection. If the BCM450 experiences a primary connection failure, it will dial-out using the dial-up interface configured as the backup.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, select the modem.
3	On the **Link Parameters** tab, enter the **Dial-out number** for the modem.
4	On the **Dial-out Interfaces** table, select the **Enable** check box for the modem. The interface is now enabled.

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--End--

Disabling a modem interface

Use this procedure to disable a modem interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, select the modem to disable.
3	On the **Dial-out Interfaces** tab, clear the **Enable** check box next to the modem.

--End--

Deleting a modem interface

Use this procedure to delete a modem interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	Clear the **Enable** check box.
3	Click the modem interface.
4	Click **Delete**. A confirmation dialog box appears.
5	Click **Yes**. The interface is deleted.

--End--

Modem interface connection or disconnection

This section provides information about how to connect and disconnect a modem interface.

Modem interface connection or disconnection navigation

- Connecting a modem interface (page 87)

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- Disconnecting a modem interface (page 87)

Connecting a modem interface

Use the following procedure to connect a modem interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, select the interface to connect.
3	Select the **Enable** check box.
4	In the **IP Address Specification** tab, specify the remote IP address to which to connect.
5	In the top panel, click **Connect**.

--End--

Disconnecting a modem interface

Use the following procedure to disconnect a modem interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	On the **Dial-out Interfaces** tab, select the interface to disconnect.
3	Click **Disconnect**. A confirmation dialog box will appear.
4	Click **Yes**.

--End--

Modem dial-out link parameters configuration

This section provides information about configuring dial-out parameters for modem links.

Modem dial-out link parameters configuration navigation

- Configuring modem link parameters (page 88)
- Configuring the modem IP address specifications (page 89)

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Configuring modem link parameters

Use the following procedure to configure the link parameters for the modem.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces**.
2	Click the Modem interface to configure.
3	Click the **Link Parameters** tab. The Link Parameters panel appears.
4	Configure the Modem Link Parameters.

--End--

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Variable definitions

Variable	Value
Dial-Out Parameters	
Dial-out number	Telephone number to use to connect using the modem interface. If needed, area codes and all necessary digits to dial an external number are included. <read only>
Hardware Compression	Hardware compression is always enabled. <read-only>
PPP Settings	
Idle timeout	The interval after which the modem interface disconnects when there is no traffic. Default: 90 seconds <90–36000> **Note**: Specifying a value of 0 makes the connection persistent.
Maximum receive unit	The maximum size of the packets that can be received. <128-1500> Default: 1500
Maximum transmission unit	The maximum size of the packets that can be received. <128-1500> Default: 1500
IP header compression	IP header compression is always enabled. <read-only>
Software compression	Software compression is always enabled. <read-only>
Access Heading	
Authentication	Select the authentication type for the link. PAP CHAP MSCHAP MSCHAPv2 Default: CHAP
User name	User name that the link uses to authenticate itself when dialling out to another router. Default: nnadmin

Configuring the modem IP address specifications

Use the following procedure to configure the IP address specifications for the modem.

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Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces > Dial-out Interfaces** tab.
2	Click the Modem interface to configure.
3	Click the **IP Address Specifications** tab. The IP Address Specification panel appears.
4	Configure the IP Address Parameters.

--End--

Variable definitions

Variable	Value
Local IP Address Specifications	
Remote Assigned	When selected, the BCM450 obtains it's IP address from the remote end. Default: enabled
IP Address	When the Remote Assigned parameter is disabled, a static IP address must be configured in this parameter.
Remote IP Address Specifications	
Assign IP address to remote	When selected, BCM450 assigns the "IP Address" field of this section to the remote end of the connection.
IP Address	The local IP address used on the BCM450 for the dial-out connection. Default: 10.11.16.16

ISDN dial-in parameters configuration

The ISDN Dial-In Parameters controls Dial-in to the BCM for remote access. This panel is used to configure the ISDN for Dial-in. It also displays the connection status of the ISDN connections if any are in progress. ISDN lines used for ISDN dial-in can be assigned to telephone sets for voice. The ISDN setup message specifies whether the call is data or voice and the BCM handles it accordingly.

Attention: ISDN Dial-in will be disabled if both ISDN auto-dialout interfaces are enabled.

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Prerequisites for ISDN dial-in parameters configuration

- Callback is configured in User Accounts (see *N*ortel Business Communications Manager 450 1.0 Administration and Security (NN40160-601). The Callback settings must be configured in order for callback to occur.

ISDN dial-in parameters configuration navigation

- Configuring ISDN dial-in access (page 91)
- Configuring the ISDN dial-out IP address (page 94)

Configuring ISDN dial-in access

Use the following procedure to configure ISDN dial-in access.

Procedure steps

Step	Action
1	Select **Configuration > Resources > Dial Up Interfaces**.
2	On the **ISDN Dial-In Parameters** tab, select **Enable ISDN dial-in**.
3	Configure the parameters for ISDN dial-in access. Refer to the table below for information about each parameter.

--End--

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Variable definitions

Variable	Description
Enable ISDN dial-in	Enable or disable ISDN dial-in. Default: disabled
Connection State: This is a table that shows the current dial-in state if connected. **Note**: There is a maximum of two entries in this table (as there are two ISDN channels). This table will display the ISDN channels that are available for ISDN dial in. If any channels are being used for ISDN dial-out (either Automatic or manual) then this channel will not be available for ISDN dial-in, and will not appear in this table.	
User	Displays the user that is currently dialed in. <read-only>
Local IP Address	Displays the local IP address assigned to the dial-in connection. <read-only>
Remote IP Address	Displays the remote IP address of the dial-in connection. <read-only>
Callback	Displays if callback is enabled for this dial-in connection. <read-only>
Status	The status of the dial-in connection. <read-only>
ISDN Callback Settings	
Callback retries	The number of attempts made by the BCM to dial-out to the remote end during callback. <1-10> Default: 3
Callback retry interval (s)	Interval for successive connection attempts for dial-out during callback. <0-360> Default: 60 seconds
PPP Configuration. These parameters are passed to PPP stack to manage the PPP connection.	
Idle timeout (s)	Idle time period after which PPP will terminate the PPP connection. Default: 1800 seconds
Maximum receive unit	The maximum size of the packets that can be received. <128-1500> Default: 500

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Variable	Description
Maximum Transmit Unit	The maximum size of the packets that will be sent. <128-1500> Default: 500
Authentication support	Supported PPP authentication. PAP CHAP Default: CHAP
Dial-In Settings	
Assigned Lines	
Line	Assign a line for ISDN dial-in.
Dial-in Number	This field is reserved for future use. The Dial-in number is not required.
Actions	
Add...	1. Click Add... on Dial-In Settings to add an assigned line. 2. Enter the line number and press OK. The line is added to the table.
Delete	1. Click Delete on Dial-In Settings to delete an entry. 2. Click OK in the confirmation dialog box. The line is deleted from the table.
Local IP Address Specification	
Remote assigned	When selected, BCM obtains its IP address from the remote end. Cleared, the BCM will use the addresses specified below for the first and second dial-in connections. Default: disabled
First dial-in IP Address	The IP address that will be assigned to the BCM side of the second dial-in connection. This is only assigned if **Remote Assigned** is disabled. Default: 10.10.18.2
Second dial-in IP Address	The IP address that will be assigned to the BCM side of the second dial-in connection. This is only assigned if Remote Assigned is disabled. Default: 10.10.18.2
Remote IP Address Specification	
Assign IP address to remote	When enabled, BCM will assign the remote end of the connection one of the IP addresses specified below. When cleared, the remote side will assign it's own IP address. Default: disabled

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Variable	Description
First dial-in IP Address	The IP address that will be assigned to the remote side of the first dial-in connection. This is only assigned if Assign IP address to remote is enabled. Default: 10.10.18.10
Second dial-in IP Address	The IP address that will be assigned to the remote side of the second dial-in connection. This is only assigned if Assign IP address to remote is enabled. Default: 10.10.18.11

Configuring the ISDN dial-out IP address

Use the following procedure to configure the ISDN dial-out IP address.

Procedure steps

Step	Action
1	Select **Configuration > Resources > Dial Up Interfaces**.
2	On the **ISDN Dial-In Parameters** tab, configure the parameters for ISDN dial-in access. Refer to the table below for information about each parameter.

--End--

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Variable definitions

Variable	Description
Local IP Address Specification	
Remote assigned	When selected, the BCM obtains its IP address from the remote end. Default: selected
IP address	When the Remote Assigned parameter is disabled, a static IP address must be configured in this parameter.
Remote IP Address Specification	
Assign an IP address to remote	When selected, BCM will assign the IP address in the “IP Address” field of this section to the remote end of the connection. Default: cleared
IP address	The local IP address used on the BCM for the dial-out connection. Default: 10.11.16.1

Automatic dial-out interface configuration

Use the following procedure to create an automatic dial-out interface.

Management applications such as SNMP trap dial out, Scheduled Log transfer, Scheduled Backup, and Scheduled CDR records transfer can use automatic dial-out over an ISDN or Modem interface. To configure the automatic data transfer, the administrator must configure a static route with the auto dial-out field selected, and associate it with the application. When data is sent to the destination address, the network recognizes the address of the application, and triggers the dial-out to establish the connection.The packets are then sent over the link to the destination.

Prerequisites

- The dial-out interface must be enabled to configure static routes.
- The disconnect time for the interface must be greater than 60 seconds. This is configured on the Link Parameters tab of the selected interface under Configuration > Resources > Dial Up Interfaces.
- Auto dial-out routes cannot be added if the interface is already manually connected, unless the interface is already connected with auto dial-out routes configured.
- If an interface is enabled and configured for manual dial-out, the interface must be disabled before it can be configured for automatic dial-out.

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Attention: Select the Enable Dial Back-Up check box to enable Dial Back-up on the router. Do not change the other Basic or Advanced Settings.

Dial-up interfaces as primary connections navigation

- Adding an automatic dial-out interface (page 96)
- Disconnecting an automatic dial-out interface (page 96)

Adding an automatic dial-out interface

Use this procedure to add an automatic dial-out interface.

Procedure steps

Step	Action
1	Create a Modem or ISDN interface. See Adding an ISDN interface (page 80) or Adding a modem interface (page 85).
2	Enable the interface under **Configuration > Resources > Dial Up Interfaces**.
3	Select the **Automatic Dialout** check-box for the interface.
4	Set the Idle timeout (s) on the **Link Parameters** tab to a value greater than 60 seconds.
5	Add a static route.
6	Associate the route with an application.

--End--

Disconnecting an automatic dial-out interface

Use this procedure to a disconnect an automatic dial-out interface. Auto-dial-out interfaces are disconnected automatically once data transfer is complete.

Procedure steps

Step	Action
1	Select **Configuration > Resources > Dial Up Interfaces**.
2	Select the interface to disconnect.
3	Click **Disconnect.** A confirmation dialog box will appear.
4	Click **Yes.**

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--End--

Dial-up interfaces as primary connections

The dial-up interfaces on the BCM are used as a Primary or Secondary interfaces. The BCM does not have default dial-up settings, the Administrator must add them. The following tasks can be configured to use dial-up as a primary connection:

- SNMP auto trap dial-out
- modem user secure callback
- CDR records retrieval
- backup to a remote destination
- log collection to a remote destination
- software upgrades

The basic steps to set dial-up as the primary connection are:

- Create or assign an account with remote access privileges.
- Create a dial-up interface, and enter the username of the account with remote access privileges as the dial-out username.
- Create a static route for the dial-up interface, or assign a dial-out number, depending on the type of device selected.
- Tell the application to use the route.

Dial-up interfaces as primary connections navigation

- Assigning remote access privileges to an account (page 97)
- Configuring a dial-up interface (page 98)
- Configuring the SNMP Trap destination (page 98)

Assigning remote access privileges to an account

Use the following procedure to assign remote access privileges to an account.

Procedure steps

Step	Action
1	Click **Configuration > Administrator Access > Accounts and Privileges > View by Accounts** tab.
2	Click **Add.**

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The Add Account dialog box appears. Refer to the Nortel Business Communications Manager 450 1.0 Administration and Security(NN40160-601) for information on configuring an account.

3 Select the account to which you want to assign remote access privileges.

The details panel appears.

4 Select the **View by Groups** tab

5 Select the **Remote Access** group.

6 Click the **Members** tab.

7 Click **Add**.

The Add Account (s) To Group dialog box appears.

8 Select an account.

9 Click **OK**.

--End--

Configuring a dial-up interface

Use the following procedure to add a dial-up interface.

Procedure steps

Step	Action
1	Click **Configuration > Resources > Dial Up Interfaces.**
2	Click **Add.**The Add Interface dialog box appears.
3	Select **Modem** from the drop-down menu.
4	Enter a logical name for the interface in the interface name field.
5	Click **OK**.
6	Select the newly created modem interface.
7	Enter the Dial-out number to use for the back-up.
8	In the Access Settings subpanel, select the **Authentication** value that is appropriate for your configuration.
9	In the Access Settings subpanel, select the account with remote access privileges from the User Name drop-down menu.

--End--

Configuring the SNMP Trap destination

Use the following procedure to configure an SNMP trap destination.

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Attention: When the SNMP agent is restarted, the System Uptime is reset. The SNMP agent is restarted whenever you reboot the system, make an SNMP configuration change, or enable/disable the SNMP agent.

Procedure steps

Step	Action
1	Click the **Configuration** tab.
2	Open the **Administrator Access** folder, and then click **SNMP**.
3	Click the **SNMP Trap Destinations** tab. The SNMP Trap Destinations panel is displayed.
4	Click the **Add** button. The Add Trap Destination dialog box opens.
5	Configure the **Add Trap Destination** attributes.
6	Cick the **OK** button. The new trap destination is displayed in the Trap Destinations table.

--End--

Variable definitions

Variable	Description
Name	Enter a name for the trap.
Host address	Enter the IP address of the trap destination.
Port	Enter the UDP port number from which the trap will be sent. The default value is 162.
SNMP Version	Select the version of the SNMP Agent for the trap. Options are: v1/v2C, and v3.
Community String	Enter the community string to use for the SNMP trap.
User Name	For v3 only, enter the user name for the SNMP trap.

Static routes for dial-out configuration

Static routes must be configured for Automatic Dial-out Interfaces. These can be programmed in Element Manager. For more information see the *Nortel Businsess Communications Manager 450 1.0 Configuration-Telephony Guide*. (NN40160-502)

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BCM450 scheduled services

Use scheduled services to control how calls are answered in off-hours (Ringing Groups), how calls are routed at various times of the day, and how restrictions are applied on lines and telephones at specific times of the day.

Prerequisites to BCM450 scheduled services

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).
- You can access scheduled services through Telset Administration using **CONFIG > Services.

BCM450 scheduled services navigation

- Configuring schedule names and timers (page 101)
- Configuring scheduled service (page 102)

Configuring schedule names and timers

Configure schedule names and timers to change the names of the schedules, and to determine when the schedules, which are set to automatically execute, are deployed. Any changes to these settings affect all services that use schedules.

Prerequisites

- You can use a 12-hour or 24-hour format. If the entry is less than 12:00, the system prompts for a day period setting.
- If you set the time to 00:00, the schedule is off.
- If the start and stop times are the same, the schedule runs for 24 hours.

Procedure steps

Step	Action
1	Select **Configuration > Telephony > Scheduled Services**.
2	In the **Schedules** list, double-click on a schedule, and then enter a descriptive name for the schedule.

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3 In the **Schedule Times** area, double-click the **Start Time**, and then enter a start time for each day.

4 Click **OK**.

5 In the **Schedule Times** area, double-click the **Stop Time**, and then enter an end time for each day.

6 Click **OK**.

7 Repeat step 2 to step 6 for each schedule you want to configure.

--End--

Variable definitions

Variable	Value
Schedules	A descriptive name for the schedule.
Day	Any of the seven days.
Start Time	The time when the schedule starts, and any previously-running schedules stop. The time format is 00:00 to 12:00 a.m.-p.m./24:00.
Stop Time	The time when the schedule stops. The time format is 0:00 to 12:00 a.m.-p.m./24:00.

Configuring scheduled service

Configure scheduled service for the schedules used on your system.

Procedure steps

Step	Action
1	Select **Configuration > Telephony > Scheduled Services**.
2	In the **Services** area, configure the attributes for your schedules.

--End--

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Variable	Value
Service control password	Restriction and Routing schedules require the user to enter a password on the control telephone before scheduling can be changed. If you forget the password, enter a new password.
Schedule	The schedules that are available on the system.
Routing Svc	Defines the routing service function (Off, Manual, Auto) • Off — prevents the service from being activated. • Manual — turns the service on and off at any time from a control telephone. This setting overrides any automatically-running schedules. • Auto — programs a stop and start time for a service under the Common Settings heading. These times are automatically executed after the service is active.
Overflow	If all the lines used by a route are busy when a call is made, you can program Routing service to overflow to the route used for normal mode. If the call is routed to use the normal mode, the telephone sounds a warning tone and shows the message Expensive route. The caller can release the call to avoid the toll charges or can continue. A schedule must be active for overflow routing to be in effect. Overflow routing is not available in normal mode. You must create an overflow route to be used with each routing code. In this way, every route used with a scheduled mode that has overflow service must have an alternate route in normal service.
Ringing Svc	Defines the routing service function (Off, Manual, Auto) Off — prevents the service from being activated. Manual — turns the service on and off at any time from a control telephone. This setting overrides any automatically-running schedules. Auto — programs a stop and start time for a service under the Common Settings heading. These times are executed automatically after the service is active.

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Variable	Value
Trunk Answer	Allows you to answer, from any telephone, an external call that is ringing at another telephone in your office, if the Ringing Service is active on that line at the time of the call. If the service is not active, you cannot answer the call. Trunk answer is useful if the other telephones are not assigned the same lines as the telephone you are using to answer the call. You can change the Trunk Answer setting only if Ringing service is set to Manual or Auto.
Extra Dial Set	Assigns an additional telephone to receive calls for each schedule. The extra dial set is activated during a schedule by entering the Ringing service feature code from the assigned direct dial telephone. This does not activate the Ringing service, unless the direct dial telephone is also a control set.
Restriction Svc	Defines the routing service function (Off, Manual, Auto) Off — prevents the service from being activated. Manual — turns the service on and off at any time from a control telephone. This setting overrides any automatically-running schedules. Auto — programs a stop and start time for a service under the Common Settings heading. These times are executed automatically after the service is active.

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BCM450 music source configuration

The Music on Hold and Background Music features provide music to users. For these features to function properly, you must connect a music source to the BCM system and configure the music source.

If you choose Music Manager, you must configure the play list, which is the music available to the BcmAmp audio player.

Prerequisites for BCM450 music source configuration

- Launch Element Manager and connect to your BCM system. For more information, see Connecting to the BCM system (page 28).

BCM450 music source configuration navigation

- Selecting the audio jack as a music source (page 105)
- Selecting a network device as a music source (page 106)
- Accessing the Music Manager administration Web page (page 107)
- Loading music onto the BCM450 (page 108)
- Adding music to the play list (page 109)
- Removing music from the play list (page 109)
- Deleting music from the BCM450 (page 110)
- Using the BcmAmp Player (page 110)

Selecting the audio jack as a music source

After you connect the music source through the audio jack, you must identify the audio jack as the music source.

Prerequisites

- For information about connecting a music source through the audio jack, see *Installation—System* (NN40160-301).

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Procedure steps

Step	Action
1	Select **Configuration > Applications > Music**. The Music panel appears.
2	From the Music Source list, select **audio jack**.

--End--

Selecting a network device as a music source

Configure a network device as a music source to use the IP Music feature to connect to a music source on the data network. If you select Streaming Server, you must configure the network device before you can use it.

Prerequisites

- A third party application must support streaming G.711 A-Law, G.711 U-Law, or G.729.

Procedure steps

Step	Action
1	Select **Configuration > Applications > Music**. The Music panel appears.
2	From the Music Source list, select **Streaming Server**.
3	Configure the parameters of the Streaming Server section of the Music panel.

--End--

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Variable definitions

Variable	Value
Server	The IP address of the music source.
Server RTP Port	The number of the source port used for the music source. This is the port the BCM uses to receive music from the music source. Default port: 2216
Stream Type	The codec that is used for the incoming music source audio stream. The codec you enter here must match the codec used by the IP Music source. Default: G.711 U-Law
Frames per packets	The number of audio frames per RTP packet. The number of frames you enter must match the number of frames per packet sent from the IP Music source. Default: 3
RTP port on BCM	The number of the destination port used for the music source. This is the port BCM uses to send music to the users. Default: 2218

Accessing the Music Manager administration Web page

Select the Music Manager to use the IP Music feature to connect to the music source available on the BCM. If you select Music Manager, you must configure the BcmAmp application before you can use it.

Procedure steps

Step	Action
1	Select **Configuration > Applications > Music**. The Music panel appears.
2	From the Music Source list, select **Music Manager**.
3	Click **Launch Music Manager.** The Connect to IP Address dialog box appears.
4	In the User Name box, enter the user name you use to log on to Element Manager.
5	In the Password box, enter the password you use to log on to Element Manager.
6	Click **OK**. The Music Manager Administration Web page appears.

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7	For help with the BcmAmp application, use the BcmAmp Help accessible from the BcmAmp Web page.

--End--

Loading music onto the BCM450

Before you can add music to the play list, you must load the music track onto the BCM system.

Prerequisites

- The maximum size of any single sound file you load onto BCM is 150 MB.
- The maximum amount of disk space for Music Manager audio files is 1 GB.
- To ensure there is sufficient disk space for CallPilot, Music Manager Administration prevents you from uploading files if there is less than 1 GB of free disk space on BCM.
- To minimize the time required to upload audio files, record the audio files as a single channel (mono) using 8-bit samples at a rate of 8 kHz.

Procedure steps

Step	Action
1	Click **File Manager**. A list of audio files already on the BCM appears, along with a form for uploading new files.
2	Click **Upload**. The Upload file dialog box appears.
3	Enter the name of the file to upload or click **Browse**.
4	Navigate to the folder that contains the sound file you want to upload.
5	Select the sound file, and then click **Open**. The sound file must be a.wav or.au file format. The path for the sound file appears in the Upload box.
6	Click the **Volume** list.
7	Select a volume setting.
8	If you want to assign a name to this sound file, enter the name in the **As** box. This name appears on the File List to help identify the sound file.
9	Click **Go**.

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The Upload Completed dialog box appears.

10 Click **Close**.

The file is added to the File List.

11 Repeat step 3 to step 10 for each sound file you want to add.

--End--

Adding music to the play list

The play list is an ordered list of songs that are heard by users of the Background Music and Music On Hold features.

Procedure steps

Step	Action
1	Click **Play List**.
	The current play list appears.
2	From the **Add** list, select the sound file you want to add.
	The sound files that appear on the Add list are the sound files loaded on the BCM.
3	From the **To** list, select the location where you want to add the sound file.
4	Click **Go**.
	The sound file is added to the Play list.

--End--

Removing music from the play list

Remove music from the play list to prevent the system from playing the music file. If the same sound file appears in another location on the play list, the other entry is not removed. The file remains on the BCM system.

Prerequisites

- Removing a sound file from the play list does not delete the file from the BCM system. For information about how to delete a sound file from the BCM system, see Deleting music from the BCM450 (page 110).

Procedure steps

Step	Action

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1 Click **Play List**.

The current play list appears.

2 Beside the sound file you want to remove, click **Remove**.

The file is removed from the play list.

--End--

Deleting music from the BCM450

Delete music from the BCM to remove music that is no longer needed on your system. Deleting music files creates space on the BCM system to add more files.

Procedure steps

Step	Action
1	Click **File Manager**. A list of audio files already on the BCM appears.
2	Beside the sound file you want to delete, click **Remove**. A confirmation dialog box appears.
3	Click **OK**. The file is permanently removed from the BCM450 system.

--End--

Using the BcmAmp Player

The BcmAmp Player is a web-based interface. Use the BcmAmp Player to select, play, stop, or pause sound files that appear on the Play List.

Prerequisites

- After a song is stopped, the Stop button changes to the Play button.

Procedure steps

Step	Action
1	Click **BcmAmp Player**. The BcmAmp Player interface appears.
2	To scroll through the play list, click **Next Track** or **Previous Track**, or select a sound file from the list.

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3 To play a sound file, click **Play**.

4 To stop a sound file, click **Stop**.

5 To pause a sound file, click **Pause**.

--End--

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Basic configuration testing

Perform basic testing and troubleshooting on BCM main unit, expansion units, media bay modules (MBM), and analog terminal adapter (ATA).

Prerequisites to basic configuration testing

- Ensure your BCM system is installed and configured.

Basic configuration testing navigation

- BCM450 main unit testing (page 115)
- BCM450 expansion unit testing (page 117)
- BCM450 media bay modules testing (page 119)
- BCM450 analog terminal adapter testing (page 121)

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BCM450 main unit testing

Use the procedures in this section to test and troubleshoot the functionality of your BCM main unit.

BCM450 main unit testing navigation

- Testing the main unit (page 115)
- Troubleshooting the main unit (page 116)

Testing the main unit

If you have the digital station MBM installed in the main unit, use the following test to ensure the BCM main unit is operating properly.

Procedure steps

Step	Action
1	Go to an extension that is connected to a digital station MBM on the main unit.
2	Check for a dial tone.
3	Use this extension to make a call to another extension on the system.
4	If this system has an expansion unit with a media bay module (MBM) that supports extensions, repeat step 1 to step 4 for an extension connected to the expansion unit.
5	Go to an extension that has access to one of the lines on the main unit.
6	Select the line or line pool to which the line belongs.
7	Check for a dial tone.
8	Make a call using the line or line pool.
9	If this system has an expansion unit with an MBM that supports lines, repeat step 5 to step 8 with an extension that can access one of the lines connected to the expansion unit.

--End--

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Troubleshooting the main unit

Troubleshoot the BCM main unit if the main unit is not functioning properly.

Prerequisites

- Test the BCM main unit for proper functionality. For more information, see Testing the main unit (page 115).

Procedure steps

Step	Action
1	Verify that any nonfunctional feature is included in your installed keycode.
2	Check the wiring to the main unit and to the MBMs. Make sure that the cables are properly seated and are connected to the correct ports.
3	Reboot the BCM450 system.
4	Check LEDs.
5	Use Element Manager or the Telset Administration feature to check the programming for the lines or extensions that failed the call test.
6	If the programming is incorrect, use the Backup and Restore Utility to load a recent backup of system programming. If a recent backup is not available, correct the programming using Element Manager or the Telephone Administration feature.

--End--

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BCM450 expansion unit testing

Use the procedures in this section to test and troubleshoot the functionality of your BCM expansion unit.

BCM450 expansion unit testing navigation

- Testing the expansion unit (page 117)
- Troubleshooting the expansion unit (page 118)

Testing the expansion unit

Use the following test to ensure the BCM expansion unit is operating properly.

Procedure steps

Step	Action
1	Make sure that the BCM system is fully booted.
2	Check the power and status LEDs on the MBMs that are inserted in the expansion unit. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM or the expansion unit.
3	If the expansion unit has an MBM that supports extensions, go to an extension that is connected to the MBM.
4	Check for a dial tone.
5	Use this extension to make a call to another extension on the system.
6	If the expansion unit has an MBM that supports lines, go to an extension that accesses to one of the lines on the MBM.
7	Select the line or line pool to which the line belongs.
8	Check for a dial tone.
9	Make a call using the line or line pool.

--End--

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Troubleshooting the expansion unit

Troubleshoot the BCM expansion unit if the expansion unit is not functioning properly.

Prerequisites

- Test the BCM expansion unit for proper functionality. For more information, see Testing the expansion unit (page 117).

Procedure steps

Step	Action
1	Check that the expansion port is connected to the proper connector.
2	Check the wiring to the MBM. Make sure that the cables are properly seated and are connected to the correct ports with proper LED indications.
3	Check that the switches on the MBM are all set to on. If the MBM is a GASM or GATM, all the switches on the right are not on. To check the MBM switches, you must remove the MBM from the expansion unit.
4	Perform a firmware download to ensure that the correct version is loaded on the ASM/GASM or GATM unit.
5	Use Element Manager or Telset Administration to check the programming for the lines or extensions connected to the MBM.
6	Reboot the system to ensure that the BCM450 main unit functions correctly.
7	If the programming is incorrect, use the Backup and Restore Utility to load a recent backup of system programming. If a recent backup is not available, correct the programming using Element Manager or the Telephone Administration feature.

--End--

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BCM450 media bay modules testing

Use the procedures in this section to test and troubleshoot the functionality of your BCM media bay modules (MBM).

BCM450 media bay modules testing navigation

- Testing a station MBM (page 119)
- Testing a trunk MBM (page 119)
- Determining why an MBM does not appear in Element Manager (page 120)

Testing a station MBM

Test a station media bay module (MBM) to determine if the MBM is functioning properly.

Procedure steps

Step	Action
1	Check the Power and Status LEDs on the MBM. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM.
2	Perform a call test to make sure the new MBM functions correctly.
3	Go to an extension on the MBM.
4	Check for a dial tone.
5	Use this extension to make a call to another extension on the system.
6	Use this extension to make a call to an external telephone number.

--End--

Testing a trunk MBM

Test a trunk media bay module (MBM) to determine if the MBM is functioning properly.

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Procedure steps

Step	Action
1	Check the Power and Status LEDs on the MBM. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM.
2	Perform a call test to make sure the new MBM functions correctly.
3	Go to an extension that accesses to one of the lines on the MBM.
4	Select the line or line pool to which the line belongs.
5	Check for a dial tone.
6	Make a call using the line or line pool.

--End--

Determining why an MBM does not appear in Element Manager

Follow this procedure to define your MBM in Element Manager.

Procedure steps

Step	Action
1	Check that both the Power and Status LEDs on the MBM are solid green. If the Power LED is off, check that the power supply cable is properly seated in the expansion unit and the power supply is connected to a working power outlet.
2	Check that the MBM is properly seated in the expansion unit. If the Status LED is not solid green, check that the Expansion cable is properly seated in the Expansion port on the expansion unit and on the main unit.
3	Check that the MBM and expansion unit are enabled using either Element Manager or Telset Administration. If the units are enabled, disable them, and then re-enable them.
4	Check that all the switches on the MBM are on.
5	If the MBM is a GASM or GATM, all the switches on the right are not set to on. To check the MBM switches, you must remove the MBM from the expansion unit.

--End--

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BCM450 analog terminal adapter testing

Use the procedures in this section to test and troubleshoot the functionality of your analog terminal adapter (ATA2).

Prerequisites for BCM450 analog terminal adapter testing

- Ensure your ATA2 is installed and configured.

BCM450 analog terminal adapter testing navigation

- Correcting a non-functioning ATA2 (page 121)
- Correcting no dial tone at the ATA2 (page 121)
- Confirming correct ATA2 wiring (page 122)

Correcting a non-functioning ATA2

Correct your ATA2, if it is not functioning properly.

Procedure steps

Step	Action
1	Check for a dial tone using an analog device.
2	Check that AC power is connected to the ATA2 unit.
3	Verify that the ATA2 is connected to a digital station port.
4	Provide sufficient startup time (30–60 sec).
5	Plug an analog device into the phone port of the ATA2 and check for a dial-tone.

--End--

Correcting no dial tone at the ATA2

Correct your ATA2 if there is no dial tone.

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Procedure steps

Step	Action
1	If you hear no dial tone, replace a single-line telephone for the data communication device.
2	If you hear no dial tone at the ATA2 unit: • Disconnect the line side of the ATA2. Connect a digital telephone to the ATA2 port. • Check that the connection from the ATA2 to the BCM hardware works correctly.

--End--

Confirming correct ATA2 wiring

Use an analog phone to test the ATA2 connections.

Procedure steps

Step	Action
1	Check the a ATA2 to the terminal connection. The resistance must be 200 ohms or less for data applications and 1300 ohms or less for voice applications.
2	Check the BCM hardware to the ATA2 connection. The wiring must be equivalent to 800 m of 0.5 mm wire (2600 ft. of 24-AWG) or less. Do not use bridge taps and loading coils between the BCM hardware and ATA2.

--End--

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System parameters reference

This section provides information about the basic parameters for your BCM system, which are divided into two parts, initial parameters and startup parameters.

Navigation

- BCM450 initial parameters (page 123)
- BCM450 startup parameters (page 124)
- Trunk module parameters (page 126)
- Call-by-call services available (page 125)

BCM450 initial parameters

The initial parameters are the required parameters that you can configure using Telset Administration, Element Manager, or the Startup Profile. Note that voice mail parameters are not available through Startup Profile.

Parameters	Telset Administration	Element Manager	Startup Profile
Keycode	Feature 9*8 > Feature codes	Configuration > System > Keycodes	Keycode
IP address: • Obtain dynamically • IP address • IP subnet mask • Default gateway	Feature 9*8 > IP Address	Configuration > System > IP Subsystem	IP Address
Modem: • Enable/disable modem	Feature 9*8 > Modem	Configuration > Resources > Dial Up interfaces	Modem
System: • Region	Feature **PROFILE	Administration > Utilities > Reset > Cold Reset Telephony Services	System

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Parameters	Telset Administration	Element Manager	Startup Profile
Telephony startup: • Template • Start DN	Feature **STARTUP	Administration > Utilities > Reset > Cold Reset Telephony Services	Telephony Startup
Voice mail: • Attendant DN • UI style • Language • From Line • To Line • Number of rings	Feature 983	Configuration > Applications > Voice Messaging/Contact Center	N/A
User account: • Telset user ID (numeric) • Telset password (numeric)	Feature 9*8 > User Accounts	Configuration > Administrator Access > Accounts and Privileges > View by Accounts tab	User Account

BCM450 startup parameters

The startup parameters are the remaining required parameters that you cannot configure using Telset Administration. You must configure these parameters using Element Manager or the Startup Profile.

Parameters	Telset Administration	Element Manager	Startup Profile
System: • System name	N/A	Configuration > System > Identification	System
System: • System ID	N/A	Configuration > System > Keycodes (View ID is set automatically and cannot be changed)	System
Time: • Date and Time source • NTP server address • Date and time • Time zone	N/A	Configuration > System > Date and Time	Time

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Parameters	Telset Administration	Element Manager	Startup Profile
DHCP server: • Enable/disable server • IP domain name • Primary DNS • Secondary DNS • Default gateway	N/A	Configuration > Data Services > DHCP Server > General Settings tab	DHCP Server
IP Phones: • Enable registration • Enable global pwd • Global pwd • Auto-assign DNs • Advertisement/Logo	N/A	Configuration > Resources > Telephony Resources > IP Sets	IP Telephones
SNMP Agent: • Enable/disable SNMP agent • Minimum security • SNMP version support	N/A	Configuration > Administrator Access > SNMP > General tab	SNMP Agent
SNMP community: • Community string • Type of access	N/A	Configuration > Administrator Access > SNMP > Community Strings tab	SNMP Community
SNMP manager: • Manager IP address	N/A	Configuration > Administrator Access > SNMP > General tab	SNMP Manager
User account: • User ID • Group • Description • Callback number	N/A	Configuration > Administrator Access > View by Accounts tab	User Account

Call-by-call services available

The following table lists the applicable services for the protocol defined on the Module record.

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Protocol	Services Available				
	Foreign Exchg	Inwats (800)	Intl-800	Switched Digital (SDS)	Nine Hundred (900)
NI	SID or All	By number or All	N/A	N/A	N/A
DMS-100	SID or All	SID, By number, or All	N/A	N/A	N/A
DMS-250	SID or All	SID, By number, or All	N/A	N/A	SID, or By number, or All
4ESS	N/A	By number or All	By number or All	By number or All	By number or All
SL1					

Trunk module parameters

The trunk module parameters provides information that is unique to the type of trunk module selected.

The following table describes the possible fields, trunk module parameters, and an indication of which types of modules use each setting.

Attribute	Value	Module/line type
Trunk type		All trunks
	Indicates the type of trunks. This field is read-only for all modules except DTM modules.	
Trunk mode	DS/CLID, Global, Legacy	Loop
	DS/CLID: displays for old North American LS/DS or CLID analog trunk modules, the old analog MBM, or the GATM with North American DIP switch settings. Global: displays for the GATM MBM with no regional DIP switches set. Legacy: displays for all other (old) analog trunk modules	

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Attribute	Value	Module/line type
Protocol	NI-2, DMS-100, DMS-250, AT&T4ESS, SL-1, Euro, ETSI Q.Sig	PRI
	Choose the trunk protocol used by your service provider. The supported protocols are: PRI-T1: NI (NI-1 and NI-2), DMS-100, DMS-250, AT&T4ESS, SL-1 PRI-E1: ETSI QSIG, Euro, SL-1 Note: SL-1 and ETSI QSIG require an MCDN keycode to display. BRI: Protocol can also be selected on BRI T-loops under Configuration > Telephony > Loops. Note: Always check the line protocol with the central office.	
NSF Extension	None, WATS, ALL	PRI
	The Network Specific Facilities (NSF) information element is used to request a particular service from the network. Settings are based on the type of switch to which the line connects. Suggested settings: DMS-100/250: NONE Siemens ESWD, Lucent 5ESS: WATS GTD5, DMS-10: ALL If you select NONE, the NSF extension bit is not set for any service. If you select WATS, the NSF extension bit is set for unbanded OUTWATS calls. If you select ALL, the NSF extension is always set for all CbC services. Appears only for NI protocol.	
Protocol type	User, Network	PRI
	If you select SL-1 protocol, an additional setting, Protocol type, appears. SL-1 protocol is a private networking protocol. Use this protocol to designate a BCM450 node as a Network (controller). The default setting is User (client). In public network configurations, the CO is generally considered the Network side or controller. Applies to SL-1 protocol only.	
B-channel selection sequence	Ascending Sequential Descending Sequential None	PRI
	Defines how B-channel resources are selected for call processing.	

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Attribute	Value	Module/line type
Answer timer	1, 2, 3, 4, or 5 sec.	E&M PRI
	Set the minimum duration of an answer signal before a call is considered to be answered.	
Disconnect timer	60, 100, 260, 460, or 600 milliseconds	Loop T1
	Specify the duration of an Open Switch Interval (OSI) before a call on a supervised external line is considered disconnected. This setting must match the setting for the line at the central office (CO). You must enable disconnect supervision by changing the Line Trunk mode attribute. Under the Telephony Services sub-heading, choose Lines and Line/trunk Data.	
Clock Source	Primary External Secondary External Internal	T1 PRI *BRI S/T DASS 2
	Designates whether the DTM/BRI acts as a primary or secondary timing component for an external timing source or as the internal timing source. Note: A BRI module can be programmed with primary/secondary clock source, however, it is recommended that a BRI module always be set to Internal if a DTM exists on the system to be the Primary External clock source. Warning: Changing the clock source can disconnect calls. If you change the clock source for your system, you can cause your system DTM interface(s) to reset, resulting in dropped calls. Choose a suitable time to change the clock source and use the Page feature to inform users of possible service disruptions.	
Send Name Display	Select or clear	PRI *BRI QSIG
	If you select this check box, the system sends a specified outgoing name display (OLI) from the calling telephone. Appears only for Protocols: SL-1, NI, DMS-100, DMS-250, or PRI QSIG.	
Remote Capability MWI	Select or clear	PRI
	Use this setting to indicate MWI compatibility on the specific loop(s) that you are using to connect to the central voice mail system on a Meridian 1, that has the MWI package installed, with the RCAP setting set to MWI. Appears only for SL-1 protocol.	

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Attribute	Value	Module/line type
Host node	M1, Embark, IDPX, DSM	DNPSS
	DPNSS cards connected to Embark switches have a different way of handling call diversion, therefore, if you provision a DTM for DPNSS, you must indicate what type of switch the lines are connected to. If you select the Embark switch, calls are diverted using the Call Forwarding feature instead of call diversion.	
Local Number Length		DPNSS
	Determines how many digits to read on an incoming call to determine that the call is meant for this system.	
Maximum Transits	Default: 31	PRI
	Indicate the maximum number of times that a call transfers within the SL-1 network before the call is dropped. Protocol must be set to SL-1 to display this field.	
T1 parameters		
CO fail		T1 PRI
	Specify a carrier failure standard (T1A-5474, TR62411)	
Interface levels	ISDN, PSTN	T1 PRI
	Define a loss plan setting.	
Framing	ESF, SF	T1 PRI
	Select the framing format used by your T1 or PRI service provider: Extended Superframe (ESF) or Superframe (SF). Contact your T1 or PRI service provider for the proper setting. (SF or Superframe is sometimes known as D4.)	
Line coding	B8ZS, AMI	T1 PRI
	Define the encoding signals on a T1 line. Select the standard used by your T1 service provider. Contact your T1 service provider for the proper setting.	
Internal CSU	<check box>	T1 PRI
	Turn the internal T1 channel service unit (CSU) on or off.	
CSU line build	0, 7.5, or 15 dB	T1 PRI
	Set the gain level of the transmitted signal. This setting appears only if the Internal CSU is Enabled.	

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Attribute	Value	Module/line type
DSX1 build	000-100, 100-200, 200-300, 300-400, 400-500, 500-600, or 600-700 feet	T1 PRI
	Set the distance between BCM450 and an external channel service unit. This setting appears only if the Internal CSU is Disabled. Contact your service provider for the proper settings.	
CRC4	<check box>	E1 PRI
	Ensure this is enabled or disabled to match the service provider Cyclic Redundancy Check (CRC4) setting for the trunk.	

Configuring digital and analog loop module parameters

Module mode: The mode for the type of line being supported (DS/CLID, Global, Legacy).

Disconnect Timer: Enter the time delay for disconnect supervision for lines supplying supervised external lines. This setting must match the CO setting.

Configuring DTM-T1/E1 module parameters

Clock Source: Determine how the module functions for timing on the network.

- Primary External: The network connection from where the system collects all the clocking information.
- Secondary External: A backup for the Primary clock source.
- Internal: Uses the clocking derived from the Primary connection.

Attention: Changing the clock source can disconnect calls. If you change the clock source for your system, you can cause your system DTM interface(s) to reset, resulting in dropped calls. Choose a suitable time to change the clock source and use the Page feature to inform users of possible service disruptions.

CO fail: Use the carrier failure standard used by the service provider (TIA-5474, TR62411).

Interface levels: Choose the loss plan setting supported on the lines (ISDN, PSTN).

Framing: Choose the framing format supported by the service provider (ESF, SF).

Internal CSU: Turn the internal channel on or off.

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Attention: Disable the module before changing the internal CSU setting.

CSU line build (Internal CSU set to ON): Set the gain level of the transmitted signal (0, 7.5, 15 dB)

DSX1 build (Internal CSU set to OFF): Set the distance between the system hardware and the external channel service unit (000-100, 100-200, 200-300, 300-400, 400-500, 500-600, or 600-700 feet)

Line coding: Select the encoding signal used by the service provider (B8ZS, AMI)

CRC4 (E1 lines only): Set the parameter to match the setting at the other end of the line.

Configuring DTM-PRI module parameters

Protocol: Set to the protocol used by the CO.

Attention: Always confirm the line protocol with the head office. Failure to set the correct protocol could result in erratic service or service failure on the lines.
PRI-T1 supports: NI-2, DMS-100, DMS-250, 4ESS, SL-1
PRI-E1 supports: ETSI QSIG, Euro, SL-1

Attention: SL-1 requires an MCDN keycode and ETSI QSIG requires a QSIG keycode.

Protocol type (for SL-1): Select the setting that applies to the way in which the system is viewed by the network. Default is User (Slave) (the CO or another network node controls the network). If you want this system to control the network protocol, select Network.

NSF Extension: None (DMS-100/250 switches); WATS (Siemens, ESWD, Lucent 5ESS switches); ALL (GTD5 and DMS-10 switches).

B-channel selection sequence: choose how B-channel resources are selected for call processing.

Clock Source: Determine how the module functions for timing on the network (Primary External, Secondary External, Internal)

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Attention: Changing the clock source can disconnect calls. If you change the clock source for your system, you can cause your system DTM interface(s) to reset, resulting in dropped calls. Choose a suitable time to change the clock source and use the Page feature to inform users of possible service disruptions.

Send Name Display: select check box to activate outgoing name display (OLI).

Remote Capability MWI (SL-1): Select the check box only if connecting to a Meridian 1, or other compatible endpoint, with the appropriate MWI package and RCAP set to MWI.

Maximum transits (SL-1): Default: 31. Set the number of times a call transfers within the private network before being dropped.

CO fail: Use the carrier failure standard used by the service provider (TIA-5474A, TR62411)

Interface levels: Choose the loss plan setting supported on the lines (ISDN, PSTN)

Framing: Choose the framing format supported by the service provider (ESF, SF)

DSX1 build (Internal CSU set to OFF): Set the distance between the system hardware and the external channel service unit (000-100, 100-200, 200-300, 300-400, 400-500, 500-600, or 600-700 feet)

Configuring BRI Loop module parameters

Clock Source: Determine how the module functions for timing on the network (Primary External, Secondary External, Internal). After the BRI module is configured as a T-loop this parameter is configured under Configuration > Telephony > Loops.

Attention: Changing the clock source can disconnect calls. If you change the clock source for your system, you can cause your system BRI S/T interface(s) to reset, resulting in dropped calls. Choose a suitable time to change the clock source and use the Page feature to inform users of possible service disruptions.

Send Name Display (BRI-QSIG): select check box to activate outgoing name display (OLI). After the BRI module is configured as a T-loop this parameter is configured under Configuration > Telephony > Loops.

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Configuring DASS2 module parameters

Clock Source: Determine how the module functions for timing on the network (Primary External, Secondary External, Internal).

Attention: Changing the clock source can disconnect calls. If you change the clock source for your system, you can cause your system DTM interface(s) to reset, resulting in dropped calls. Choose a suitable time to change the clock source and use the Page feature to inform users of possible service disruptions.

Configuring European DTM/DPNSS line parameters

Host node: Choose the type of switch the lines connect to, to ensure correct call forwarding (M1, Embark, IDPX, DSM).

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System capacity reference

This section provides information about the system capacity for your BCM system.

Navigation

- BCM450 device type capacity (page 135)

BCM450 device type capacity

The following table provides the maximum capacities for your BCM devices.

Table 1 BCM450 device type capacity

Device type	Capacity
Maximum TDM Set DNs that can exist in the system (Note: DECT and T7406e wireless handsets are part of the TDM set count).	300
Maximum is affected by IP DN count. (Available DNs = 300 - IP DNs allocated)	
Maximum number of IP Set DNs. Maximum is affected by TDM DN count. (Available DNs = 300 - TDM DNs allocated)	300
Maximum number of Application DNs (Call Centre Skillsets, VoiceMail)	115
Maximum number of ISDN DNs	16
Maximum number of Hunt Group DNs	30
Maximum number of Target Lines (target line numbering starts at line 361)	320
Maximum number of TDM Trunks (Analog, Digital physical trunks). Maximum is affected by IP Trunk count. (Available TDM trunks = 130 - IP Trunks allocated)	130
Maximum number of IP (H.323/SIP) Trunks. Maximum is affected by TDM Trunk count. (Available IP trunks = 130 - TDM Trunks allocated).	130
Physical Line Number (#) Range (to be allocated as lines are configured)	001-360
More numbers here than physical lines - allows administrator flexibility in numbering lines during line configuration.	

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Table 1 BCM450 device type capacity

Device type	Capacity
Maximum Conference Parties	120
Maximum Conferences	60
Attention: The system can be configured to support more than the recommended limits, however; only BCM configurations not exceeding the recommended limits are supported by Nortel.	

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Market profile attributes reference

This section provides information about the market profile attributes for your BCM system.

Navigation

- Interface availability (page 137)
- Tones and cadences (page 140)
- Core parameters for market profiles (page 150)
- Analog trunk parameters (page 169)
- GASM8 parameters (page 177)
- GASI parameters (page 181)
- ATA2 parameters (page 183)
- Voice mail (page 187)
- ISDN line services (page 189)
- Analog and digital trunk types (page 190)

Interface availability

Some of the BCM450 interfaces are customized for a specific region and are not available to all market profiles. The following sections provide a list of interfaces available within each market profile.

Analog interfaces

Analog interfaces are not supported in the following market profiles: Denmark, France, Germany, Holland, Italy, Norway, Spain, Sweden, and Switzerland.

The symbols in the following table are defined as follows:

- ✓ indicates full support. The interface is available and is localized in the market profile.
- ✸ indicates that functionality and support is limited. The interface is available in the market profile, but is not localized.

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Table 2 Analog interface availability by market profile (Sheet 1 of 2)

Market profile	ASM/ ASM8	ASM8+	GASM8	GASI	CTM4/ CTM8	Legacy GATM4/ GATM8	New GATM4/ GATM8	Legacy 4X16	G4x16 G8x16 (new)	GATI	ADID
Australia		✓✸	✓	✓		✓	✓		✓	✓	
Bahrain		✓✸					✓		✓	✓	
Brazil						✓	✓		✓	✓	
CALA			✓	✓	✓✸	✓✸	✓✸	✓✸	✓✸	✓ ✸	
Canada	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Caribbean			✓	✓	✓	✓	✓	✓	✓	✓	✓
Global	✓✸	✓✸	✓✸	✓	✓✸	✓✸	✓✸	✓✸	✓✸	✓ ✸	
Hong Kong	✓✸	✓✸	✓✸	✓ ✸	✓✸	✓✸	✓		✓	✓	✓
Ireland				✓			✓		✓	✓	
Italy							✓✸		✓✸	✓✸	
Malaysia							✓		✓	✓	
Mexico			✓✸			✓	✓		✓	✓	
New Zealand		✓✸	✓✸			✓✸	✓		✓	✓	
North America	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poland	✓✸	✓✸	✓	✓		✓	✓		✓	✓	
PRC					✓✸	✓✸	✓		✓	✓	
Russia							✓		✓	✓	
Saudi							✓		✓	✓	
Singapore							✓		✓	✓	
South Africa				✓			✓		✓	✓	
Spain				✓			✓		✓	✓	

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Table 2 Analog interface availability by market profile (Sheet 2 of 2)

Market profile	ASM/ ASM8	ASM8+	GASM8	GASI	CTM4/ CTM8	Legacy GATM4/ GATM8	New GATM4/ GATM8	Legacy 4X16	G4x16 G8x16 (new)	GATI	ADID
Taiwan					✓✸	✓	✓		✓	✓	✓
United Kingdom	✓✸	✓✸	✓	✓		✓	✓		✓	✓	

Digital interfaces

The following table lists the digital interfaces supported in each market profile. Note that the Digital Station Interface and the BRI cNIC are onboard interfaces.

Table 3 Digital interface availability by market profile (Sheet 1 of 2)

Market profile	DSM16+/ DSM32+	Digital station interface	BRI	BRI cNIC	DTM	R2MFC
Australia	✓	✓	✓	✓	✓	
Bahrain	✓	✓	✓	✓	✓	
Brazil	✓	✓	✓		✓	
CALA	✓	✓	✓		✓	✓
Canada	✓	✓	✓	✓	✓	
Caribbean	✓	✓	✓	✓	✓	
Denmark	✓	✓	✓	✓	✓	
France	✓	✓	✓	✓	✓	
Germany	✓	✓	✓	✓	✓	
Global	✓	✓	✓	✓	✓	✓
Holland	✓	✓	✓	✓	✓	
Hong Kong	✓	✓	✓		✓	
Ireland	✓	✓	✓	✓	✓	
Italy	✓	✓	✓	✓	✓	
Malaysia	✓	✓				
Mexico	✓	✓	✓		✓	✓
New Zealand	✓	✓	✓	✓	✓	
North America	✓	✓	✓	✓	✓	
Norway	✓	✓	✓	✓	✓	

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Table 3 Digital interface availability by market profile (Sheet 2 of 2)

Market profile	DSM16+/ DSM32+	Digital station interface	BRI	BRI cNIC	DTM	R2MFC
Poland	✓	✓	✓	✓	✓	
PRC	✓	✓	✓		✓	
Russia	✓	✓				
Saudi	✓	✓				
Singapore	✓	✓				
South Africa	✓	✓				
Spain	✓	✓	✓	✓	✓	
Sweden	✓	✓	✓	✓	✓	
Switzerland	✓	✓	✓	✓	✓	
Taiwan	✓	✓	✓		✓	
United Kingdom	✓	✓	✓	✓	✓	

Tones and cadences

The following tables provide region-specific settings for tones and cadences. The sum of two tones is indicated by “A+B”. The sequence of two tones is indicated by “A:B”.

Localized, Dial, and Quiet Dial

Table 4 Localized, Dial, and Quiet Dial (Sheet 1 of 2)

Market profile	Localized	Dial			Quiet Dial		
		Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	Yes	400	-13	Continuous	400	-21	Continuous
Bahrain	Yes	330+440	-16	Continuous	330+440	-20	Continuous
Brazil	Yes	425	-11.5	Continuous	425	-18	Continuous
CALA	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
Canada	Yes	440+350	-17	Continuous	440+350	-25	Continuous
Caribbean	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
Denmark	Yes	425	-11.5	Continuous	425	-19.5	Continuous
France	Yes	440	-11.5	Continuous	400	-17.5	Continuous

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Table 4 Localized, Dial, and Quiet Dial (Sheet 2 of 2)

Market profile	Localized	Dial			Quiet Dial		
		Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Germany	Yes	425	-11.5	200 ms on 275 ms off 200 ms on 275 ms off 200 ms on 875 ms off	425	-17.5	200 ms on 275 ms off 200 ms on 275 ms off 200 ms on 875 ms off
Global	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
Holland	Yes	425	-11.5	Continuous	425	-19.5	Continuous
Hong Kong	Yes	440+350	-11.5	Continuous	440+350	-17.6	Continuous
Ireland	Yes	425	-14.5	Continuous	425	-17.5	Continuous
Italy	Yes	350+425	-8.5	Continuous	350+425	-17.5	Continuous
Mexico	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
New Zealand	Yes	400	-13	Continuous	400	-21	Continuous
North America	Yes	440+350	-17	Continuous	440+350	-25	Continuous
Norway	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Poland	Yes	425	-17.5	Continuous	425	-19.5	Continuous
PRC	Yes	450	-11.5	Continuous	450	-17.5	Continuous
Russia	Yes	425	-10	Continuous	425	-13	Continuous
South Africa	Yes	367+400	-17	Continuous	367+400	-25	Continuous
Spain	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Sweden	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Switzerland	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Taiwan	Yes	400	-12	Continuous	400	-20	Continuous
United Kingdom	Yes	440+350	-17.5	Continuous	440+350	-14.5	Continuous

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Special Dial, Overflow, and Busy

Table 5 Special Dial Overflow and busy (Sheet 1 of 3)

Market profile	Special Dial			Overflow			Busy		
	Tones (Hz)	Level per Tone dBm0	Cadence	Tones (Hz)	Level per Tone dBm0	Cadence	Tones (Hz)	Level per Tone dBm0	Cadence
Australia	400	-13	100 ms on 900 ms off	800	-13	100 ms on 100 ms off	425	-13	375 ms on 375 ms off
Bahrain	330+400	-16	100 ms on 900 ms off	425	-16	400 ms on 350 ms off 225 ms on 525 ms off	425	-15	375 ms on 375 ms off
Brazil	425	-11.5	500 ms on 500 ms off	950: 1400: 1800: silence	-18	333 ms: 333 ms: 333 ms: 1s off	425	-11.5	250ms on 250 ms off
CALA	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Canada	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Caribbean	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Denmark	Silence			950:1400:1800: silence	-25	333 ms: 333 ms: 333 ms: 1s off	425	-11.5	250 ms on 250 ms off
France	Silence			950:1400:1800: silence	-25: -11.5: -25: silence	333 ms: 333 ms: 333 ms: 1 s off	440	-11.5	500 500 ms off
Germany	Silence			425	-11.5	240 ms on 240 ms off	425	-11.5	150 ms on 475 ms off

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Table 5 Special Dial Overflow and busy (Sheet 2 of 3)

Market profile	Special Dial			Overflow			Busy		
Global	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Holland	425	-11.5	500 ms on 50 ms off	950: 1400: 1800: silence	-18	333 ms: 333 ms: 333 ms: 1 s off	425	-11.5	500 ms on 500 ms off
Hong Kong	Silence			480+620	-14.5	500 ms on 500 ms off	480+620	-14.5	500 ms on 500 ms off
Ireland	400:432	-14.5	0.4 s:0.4 s	425	-17.5	450 ms on 450 ms off	425	-17.5	450 ms on 450 ms off
Italy	Silence			425	-8	200 ms on 200 ms off	425	-8	500 ms on 500 ms off
Mexico	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
New Zealand	400: silence	-13	0.1 s:0.1 s	400	-11.5	75 ms on 100 ms off 75 ms on 100 ms off 75 ms on 400 ms off	400	-11.5	500 ms on 500 ms off
North America	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Norway	Silence			950:1400:1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	500 ms on 500 ms off
Poland	Silence			950:1400:1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-17.5	500 ms on 500 ms off

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Table 5 Special Dial Overflow and busy (Sheet 3 of 3)

Market profile	Special Dial			Overflow			Busy		
PRC	Silence			450	-11.5	400 ms on, 400 ms off	450	-11.5	350 ms on 350 ms off
Russia	Silence			425	-10	160 ms on, 160 ms off	425	-10	350 ms on, 350 ms off
South Africa	Silence			400	-21	250 ms on, 250 ms off	400	-21	500 ms on, 500 ms off
Spain	Silence			950:1400:1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	200 ms on 200 ms off
Sweden	425	-11.5	320 ms on 25 ms off	950: 1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	250 ms on 250 ms off
Switzerland	Silence			950: 1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	500 ms on 500 ms off
Taiwan	Silence			950: 1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	480+620	-21	500 ms on 500 ms off
United Kingdom	440+350 :440	-17.5	0.75 s:0.75 s	400	-11.5	Continuous	400	-11.5	375 ms on 375 ms off

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Ring Back, Aux Ring, Async Ring Back

Table 6 Ring Back, Aux Ring, Async Ring Back (Sheet 1 of 2)

Market profile	Ring Back			Aux Ring			Async Ring Back		
	Tones (Hz)	Level per Tone dBm0	Cadence	Tones (Hz)	Level per Tone dBm0	Cadence	Tones (Hz)	Level per Tone dBm0	Cadence
Australia	400+450	-14.5	400 ms on 200 ms off 400 ms on 2 s off	Silence			400+450	-14.5	Continuous
Bahrain	425	-15	400 ms on 200 ms off 400 ms on 2s off	Silence			425	-15	Continuous
Brazil	425	-11.5	1 s on 4 s off	Silence			Silence		
CALA	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Canada	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Caribbean	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Denmark	425	-11.5	1 s on 4 s off	Silence			Silence		
France	440	-11.5	1.5 s on 3.5 s off	Silence			440+450	-14.5	Continuous
Germany	425	-11.5	1 s on 4 s off	Silence			Silence		
Global	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Holland	425	-11.5	1 s on 4 s off	Silence			Silence		
	Tones (Hz)	**Level per Tone dBm0**	**Cadence**	**Tones (Hz)**	**Level per Tone dBm0**	**Cadence**	**Tones (Hz)**	**Level per Tone dBm0**	**Cadence**
Hong Kong	440+480	-11.5	400 ms on 200 ms off 400 ms on 3 s off	Silence			Silence		

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Table 6 Ring Back, Aux Ring, Async Ring Back (Sheet 2 of 2)

Market profile	Ring Back			Aux Ring			Async Ring Back		
Ireland	400+450	-14.5	400 ms on 200 ms off 400 ms on 2s off	Silence			400+450	-14.5	Continuous
Italy	425	-8	1 s on 4 s off	Silence			Silence		
Mexico	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
New Zealand	400+450	-14.5	400 ms on 200 ms off 400 ms on 2 s off	Silence			440+480	-14.5	Continuous
North America	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Norway	425	-11.5	1 s on 4 s off	Silence			Silence		
Poland	425	-17.5	1s on 4 s off	Silence			Silence		
PRC	450	-11.5	1s on 4 s off	Silence			Silence		
Russia	425	-10	1 s on, 4 s off	Silence			425	-10	Continuous
	Tones (Hz)	**Level per Tone dBm0**	**Cadence**	**Tones (Hz)**	**Level per Tone dBm0**	**Cadence**	**Tones (Hz)**	**Level per Tone dBm0**	**Cadence**
South Africa	367+400	-16	400ms on, 200ms off, 400ms on, 2s off	Silence			367+400	-16	Continuous
Spain	425	-11.5	1.5 s on 3 s off	Silence			Silence		
Sweden	425	-11.5	1 s on 5 s off	Silence			Silence		
Switzerland	425	-11.5	1 s on 4 s off	Silence			Silence		
Taiwan	440+480	-21	1 s on 2 s off	Silence			440+480	-21	1 s on 2 s off

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Hold, Warble, Intrusion

Table 7 Hold, Warble, Intrusion (Sheet 1 of 2)

Market profile	Hold			Warble			Intrusion		
	Tones (Hz)	Level per Tone dBm0	Cadence	Tones (Hz)	Level per Tone dBm0	Cadence	Tones (Hz)	Level per Tone dBm0	Cadence
Australia	400	-13	Continuous	Silence			425	-13	Continuous
Bahrain	400	-16	Continuous	Silence			400	-16	Continuous
Brazil	425	-11.5	0.5 s on 9.5 s off	Silence			Silence		
CALA	440	-14	Cadenced by CoreTel	Silence			Silence		
Canada	440	-14	Cadenced by CoreTel	Silence			Silence		
Caribbean	440	-14	Cadenced by CoreTel	Silence			Silence		
Denmark	Silence			Silence			425	-11.5	50 ms on 500 ms off
France	400	-11.5	Continuous	Silence			1400	-11.5	Continuous
Germany	425	-11.5	Continuous	Silence			425	-11.5	Continuous
Global	440	-14	Cadenced by CoreTel	Silence			Silence		
Holland	425	-11.5	0.5 s on 9.5 s off	Silence			Silence		
Hong Kong	Silence			Silence			1400	-11.5	Continuous
Ireland	400	-11.5	Continuous	Silence			1400	-11.5	Continuous
Italy	Silence			Silence			425	-12	Continuous
Mexico	440	-14	Cadenced by CoreTel	Silence			Silence		
New Zealand	400	-11.5	Continuous	Silence			1400	-11.5	Continuous
North America	400	-14	Cadenced by CoreTel	Silence			Silence		
Norway	425	-11.5	200 ms on 600 ms off 200 ms on 10 s off	Silence			1400	-11.5	Continuous

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Table 7 Hold, Warble, Intrusion (Sheet 2 of 2)

Market profile	Hold			Warble			Intrusion		
Poland	425	-17.5	Continuous	Silence			1400	-25	Continuous
PRC	Silence			Silence			1400	-11.5	Continuous
Russia	425	-10	Continuous	Silence			425	-10	Continuous
South Africa	400	-14	Continuous	Silence			Silence		
Spain	Silence			Silence			1400	-25	Continuous
Sweden	Silence			Silence			1400	-25	0.35s on, 15s off
Switzerland	Silence			Silence			1400	-25	Continuous
Taiwan	440	-14	Continuous	Silence			Silence		
United Kingdom	400	-11.5	Continuous	Silence			1400	-11.5	Continuous

Reorder, 1 kHz

Table 8 Reorder, 1 kHz (Sheet 1 of 3)

Market profile	Reorder			1 kHz		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	425	-13: off: -23: off	375 ms on 375 ms off	N/A		
Bahrain	400	-16	75 ms on 100 ms off 75 ms on 400 ms off	N/A		
Brazil	425	-11.5	250 ms on 250 ms off	N/A		
CALA	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Canada	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Caribbean	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Denmark	Silence			N/A		
France	Silence			N/A		
Germany	425	-11.5	240 ms on 240 ms off	N/A		

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Table 8 Reorder, 1 kHz (Sheet 2 of 3)

Market profile	Reorder			1 kHz		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Global	480+620	- 21	250 ms on 250 ms off	1004	-14	Continuous
Holland	425	-11.5	250 ms on 250 ms off	N/A		
Hong Kong	480+620	-14.5	250 ms on 250 ms off	N/A		
Ireland	200	-11.5: Silence: -17.5: Silence	400 ms on 350 ms off 225 ms on 525 ms off	N/A		
Italy	425	-8	200 ms on 200 ms off	N/A		
Mexico	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
New Zealand	400	-11.5: Silence: -17.5: Silence	400 ms on 350 ms off 225 ms on 525 ms off	N/A		
North America	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Norway	425	-11.5	200 ms on 200 ms off	N/A		
Poland	425	-17.5	200 ms on 200 ms off	N/A		
PRC	450	-11.5	700 ms on 700 ms off	N/A		
Russia	Silence			N/A		
South Africa	400	-21	250ms on, 250ms off	N/A		
Spain	425	-11.5	200 ms on 200 ms off 200 ms on 200 ms off 200 ms on 600 ms off	N/A		
Sweden	425	-11.5	250 ms on 750 ms off	N/A		

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Table 8 Reorder, 1 kHz (Sheet 3 of 3)

Market profile	Reorder			1 kHz		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Switzerland	425	-11.5	200 ms on 200 ms off	N/A		
Taiwan	480+620	-21	300 ms on 300 ms off	N/A		
United Kingdom	400	-11.5: Silence: -17.5: Silence	400 ms on 350 ms off 225 ms on 525 ms off	N/A		

Core parameters for market profiles

The core parameters for the available market profiles are provided in the following tables.

Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters

Table 9 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 1 of 5)

Functionality	Attribute	Market profile						
		Australia	Bahrain	Brazil	CALA	Canada	Caribbean	Denmark
Access codes	Direct dial digit	9	0	9	0	0	0	0
	Dest code for default route	0	9	0	9	9	0	9
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN	ISDN	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	NI-2	NI-2	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102	ETSI-102	NI-2	NI-2	ETSI-102
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	NI-2 DMS100 DMS250 4ESS MCDN	NI-2 DMS100 DMS250 4ESS MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	GATv1 GATv2	GATv2	GATv1 GATv2	GATv1 GATv2	GATv1 GATv2	GATv1 GATv2	N/A

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Table 9 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 2 of 5)

Functionality	Attribute	Market profile						
		Australia	**Bahrain**	**Brazil**	**CALA**	**Canada**	**Caribbean**	**Denmark**
Telephony feature settings	Conference tone supported	Yes	No	Yes	Yes	No	Yes	No
	Held line reminder	After 30 seconds	Off	Off	Off	Off	Off	Off
	Delay ring transfer	After 15 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Transfer callback timeout	After 15 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Network callback	30	30	30	30	N/A	30	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000	1000
	Link time (ms)	N/A	600	300	600	600	600	600
	Target line if busy setting	Busy	Prime	Prime	Prime	Prime	Prime	Prime
	BRI ISDN Answer Mode	Manual	Manual	Manual	Manual	Manual	Manual	Manual
System settings	Companding law	A-law	A-law	A-law	A-law	mu-law	mu-law	A-law
	DTI carrier type	E1	E1	E1	E1	T1	T1	E1
	Number of rings in a cycle	2	1	1	1	1	1	1
	M7000 set supported	Yes	Yes	Yes	Yes	No	Yes	Yes
Hunt groups	Mode	Sequential	Broadcast	Broadcast	Broadcast	Broadcast	Broadcast	Broadcast
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout (sec)	60	60	60	60	60	60	60
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone

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Table 9 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 3 of 5)

Functionality	Attribute	Market profile						
		Australia	Bahrain	Brazil	CALA	Canada	Caribbean	Denmark
Service times	Night	Start 17:00 End 08:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00
	Evening	Start 00:00 End 00:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00
	Lunch	Start 00:00 End 00:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00
Service modes	Ringing service mode	Off	Off	Off	Off	Off	Off	Off
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off	Off
	Restriction global overrides	000 131440	N/A	190	N/A	N/A	N/A	N/A
	Restriction filter 01	0(013), 1(13, 1800)	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A
	Restriction filter 05	00, 1(13, 11, 1800)	N/A	N/A	N/A	N/A	N/A	N/A
	Restriction filter 06	*	N/A	N/A	N/A	N/A	N/A	N/A
	Routing service mode	Off	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No	No

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Table 9 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 4 of 5)

Functionality	Attribute	Market profile						
		Australia	Bahrain	Brazil	CALA	Canada	Caribbean	Denmark
Public DN	Public DN lengths	Default(7)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 00(17), 1(3), 16(5), 17(4), 18(4)
Public OLI	Unknown number length	N/A	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	N/A	N/A	Min: 1 digit Max: 18 digit
	Local number length	8	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	7	7	Min: 1 digit Max: 18 digit
	National number length	9	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	10	10	Min: 1 digit Max: 18 digit
Set capabilities	Handsfree	Auto	Auto	Auto	Auto	Auto	Auto	Auto
	Pickup group	1	None	None	None	None	None	None
	Allow redirect	Enabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.								
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	UK English	English French Spanish Turkish	Portuguese English Spanish	Spanish English French	English French Spanish	English French Spanish	Danish English Norwegian Swedish
ONN blocking	Analog VSC (tone)	1831	None	None	None	None	None	None
	Analog VSC (pulse)	1831	None	None	None	None	None	None
	BRI VSC	None	None	None	None	None	None	None
	BRI per loop	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit
Release reason	Release text	Simple	Simple	Simple	None	None	None	Simple
	Release code	On	On	On	Off	Off	Off	On

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Table 9 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 5 of 5)

Functionality	Attribute	Market profile						
		Australia	Bahrain	Brazil	CALA	Canada	Caribbean	Denmark
DTMF parameters	Tone duration (ms)	80	120	120	120	120	120	120
	Pause time (ms)	3.5	1.5	1.5	1.5	1.5	1.5	1.5
	Interdigit time (ms)	100	80	80	80	80	80	80

France, Germany, Global, Holland, Hong Kong, and Ireland parameters

Table 10 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 1 of 4)

Functionality	Attribute	Market profile					
		France	Germany	Global	Holland	Hong Kong	Ireland
Access codes	Direct dial digit	9	9	0	0	0	9
	Dest code for default route	0	0	9	9	9	0
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	HKTA2015	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102 + BTNR191
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	HkTA2015 MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	N/A	N/A	GATv1 GATv2	N/A	GATv1 GATv2	GATv1 GATv2

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Table 10 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 2 of 4)

Functionality	Attribute	Market profile					
		France	Germany	Global	Holland	Hong Kong	Ireland
Telephony feature settings	Conference tone supported	No	Yes	No	No	No	Yes
	Held line reminder	Off	Off	Off	Off	Off	Immediate
	Delay ring transfer	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Transfer callback timeout	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Network callback	30	30	30	30	N/A	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000
	Link time (ms)	N/A	N/A	600	600	600	N/A
	Target line if busy setting	PBX > Busy DID > Prime	PBX > Busy DID > Prime	Prime	Prime	Prime	PBX > Busy DID > Prime
	BRI ISDN Answer Mode	Manual	Manual	Manual	Manual	Manual	Auto
System settings	Companding law	A-law	A-law	A-law	A-law	mu-law	A-law
	DTI carrier type	E1	E1	E1	E1	T1	E1
	Number of rings in a cycle	2	2	1	1	1	2
	M7000 set supported	Yes	Yes	Yes	Yes	No	Yes
Hunt groups	Mode	Sequential	Sequential	Broadcast	Broadcast	Broadcast	Sequential
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout (sec)	60	60	60	60	60	60
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00
	Evening	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00
	Lunch	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00

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Table 10 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 3 of 4)

Functionality	Attribute	Market profile					
		France	Germany	Global	Holland	Hong Kong	Ireland
Service modes	Ringing service mode	Manual	Manual	Off	Off	Off	Manual
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off
	Restriction global overrides	N/A	N/A	N/A	N/A	N/A	N/A
	Restriction filter 01	N/A	N/A	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A	00***, 170, 172, 173, 1747, 1760, 1761, 1766, 1770, 1771, 1772, 1775, 1778, 1783, 1788, 900	0(0800), 1
	Restriction filter 05	N/A	N/A	N/A	N/A	N/A	010, 1, 00
	Restriction filter 06	N/A	N/A	N/A	N/A	N/A	*
	Routing service mode	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No
Public DN	Public DN lengths	Default(25)	Default(25)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 0(11) 00(17), 1(3), 118(6), 9(3)

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Table 10 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 4 of 4)

Functionality	Attribute	Market profile					
		France	Germany	Global	Holland	Hong Kong	Ireland
Public OLI	Unknown number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
	Local number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
	National number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
Set capabilities	Handsfree	Auto	Auto	Auto	Auto	Auto	None
	Pickup group	None	None	None	None	None	None
	Allow redirect	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.							
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	EuroFrench English	German English	English French Spanish Turkish	Dutch English EuroFrench	English French Spanish	UK English
ONN blocking	Analog VSC (tone)	None	None	None	None	None	141
	Analog VSC (pulse)	None	None	None	None	None	141
	BRI VSC	None	None	None	None	None	141
	BRI per loop	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SrvcCode
Release reason	Release text	Simple	Detailed	Simple	Simple	None	Detailed
	Release code	On	Off	On	On	Off	Off
DTMF parameters	Tone duration (ms)	120	120	120	120	120	120
	Pause time (ms)	3.5	3.5	1.5	1.5	1.5	3.5
	Interdigit time (ms)	100	100	80	80	80	100

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Italy, Mexico, New Zealand, North America, Norway, and Poland

Table 11 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 1 of 4)

Functionality	Attribute	Market profile					
		Italy	Mexico	New Zealand	North America	Norway	Poland
Access codes	Direct dial digit	9	0	0	0	9	0
	Dest code for default route	0	9	0	9	0	9
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-102 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	NI-2	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102 + BTNR191	NI-2	ETSI-102	ETSI-102
	PRI trunk protocol variants	ETSI-102 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	NI-2 DMS100 DMS250 4ESS MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	N/A	GATv1 GATv2	N/A	GATv1 GATv2	N/A	GATv1 GATv2
Telephony feature settings	Conference tone supported	Yes	No	Yes	No	No	Yes
	Held line reminder	Off	Off	Immediate	Off	Off	After 30 seconds
	Delay ring transfer	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 15 rings
	Transfer callback timeout	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 15 rings
	Network callback	30	30	30	N/A	30	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000
	Link time (ms)	N/A	600	N/A	600	N/A	N/A
	Target line if busy setting	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime	Busy
	BRI ISDN Answer Mode	Manual	Manual	Auto	Manual	Auto	Manual

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Table 11 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 2 of 4)

Functionality	Attribute	Market profile					
		Italy	Mexico	New Zealand	North America	Norway	Poland
System settings	Companding law	A-law	A-law	A-law	mu-law	A-law	A-law
	DTI carrier type	E1	E1	E1	T1	E1	E1
	Number of rings in a cycle	2	1	2	1	2	2
	M7000 set supported	Yes	Yes	Yes	No	Yes	Yes
Hunt groups	Mode	Sequential	Broadcast	Sequential	Broadcast	Sequential	Sequential
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout (sec)	60	60	60	60	60	60
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 08:00
	Evening	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 00:00 End 00:00
	Lunch	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 00:00 End 00:00

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Table 11 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 3 of 4)

Functionality	Attribute	Market profile					
		Italy	Mexico	New Zealand	North America	Norway	Poland
Service modes	Ringing service mode	Manual	Off	Manual	Off	Manual	Off
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off
	Restriction global overrides	N/A	N/A	999 112	N/A	N/A	112 990
	Restriction filter 01	N/A	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0(0800), 1	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A	N/A
	Restriction filter 05	N/A	N/A	010, 1, 00	N/A	N/A	N/A
	Restriction filter 06	N/A	N/A	*	N/A	N/A	N/A
	Routing service mode	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No
Public DN	Public DN lengths	Default(25)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 0(11) 00(17), 1(3), 118(6), 9(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(25)	Default(7)

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Table 11 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 4 of 4)

Functionality	Attribute	Market profile					
		Italy	Mexico	New Zealand	North America	Norway	Poland
Public OLI	Unknown number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	N/A	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
	Local number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	7	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
	National number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	10	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
Set capabilities	Handsfree	Auto	Auto	None	Auto	Auto	Auto
	Pickup group	None	None	None	None	None	0
	Allow redirect	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.							
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	Italian English	English French Spanish Turkish	UKEnglish	English French Spanish	Norwegian English Swedish Danish	Polish EuroFrench English Czech
ONN blocking	Analog VSC (tone)	None	None	141	None	None	1831
	Analog VSC (pulse)	None	None	141	None	None	1831
	BRI VSC	None	None	141	None	None	None
	BRI per loop	SuprsBit	SuprsBit	SrvcCode	SuprsBit	SuprsBit	SuprsBit
Release reason	Release text	Simple	Simple	Detailed	None	Simple	Simple
	Release code	On	On	Off	Off	On	On
DTMF parameters	Tone duration (ms)	120	120	120	120	120	110
	Pause time (ms)	3.5	1.5	3.5	1.5	3.5	1.5
	Interdigit time (ms)	100	80	100	80	100	80

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Russia and South Africa parameters

Table 12 Russia and South Africa parameters (Sheet 1 of 3)

Functionality	Attribute	Market profile	
		Russia	South Africa
Access codes	Direct dial digit	0	9
	Dest code for default route	9	0
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	GATv2	GATv2
Telephony feature settings	Conference tone supported	No	Yes
	Held line reminder	Off	After 30 s
	Delay ring transfer	After 4 rings	After 15 rings
	Transfer callback timeout	After 4 rings	After 15 rings
	Network callback	30	30
	Host delay (ms)	1000	1000
	Link time (ms)	600	N/A
	Target line if busy setting	Prime	Busy
	BRI ISDN Answer Mode	Manual	Auto
System settings	Companding law	A-law	A-law
	DTI carrier type	E1	E1
	Number of rings in a cycle	1	2
	M7000 set supported	Yes	Yes

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Table 12 Russia and South Africa parameters (Sheet 2 of 3)

Functionality	Attribute	Market profile	
		Russia	South Africa
Hunt groups	Mode	Broadcast	Sequential
	Default delay	4 rings	4 rings
	Queue timeout	60 sec	60 sec
	If busy	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 17:00 End 08:00
	Evening	Start 17:00 End 23:00	Start 00:00 End 00:00
	Lunch	Start 12:00 End 13:00	Start 00:00 End 00:00
Service modes	Ringing service mode	Off	Off
	Ringing service trunk ans	Yes	Yes
	Restriction service mode	Off	Off
	Restriction global overrides	N/A	000 131440
	Restriction filter 01	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0(013), 1(13,1800)
	Restriction filter 05	N/A	00, 1 (13,11,1800)
	Restriction filter 06	N/A	*
	Routing service mode	Off	Off
	Routing service overflow	No	No
Public DN	Public DN lengths	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default (7)

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Table 12 Russia and South Africa parameters (Sheet 3 of 3)

Functionality	Attribute	Market profile	
		Russia	South Africa
Public OLI	Unknown number length	Min: 1 digit Max: 18 digit	N/A
	Local number length	Min: 1 digit Max: 18 digit	8
	National number length	Min: 1 digit Max: 18 digit	9
Set capabilities	Handsfree	Auto	Auto
	Pickup group	None	1
	Allow redirect	Disabled	Enabled
	Call forward delay	Enabled	Enabled
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.			
Dial tone detection		Enabled	Enabled
Set preferences	Language (first is default)	English French Spanish Turkish	UKEnglish
ONN blocking	Analog VSC (tone)	None	1831
	Analog VSC (pulse)	None	1831
	BRI VSC	None	None
	BRI per loop	SuprsBit	SuprsBit
Release reason	Release text	Simple	Simple
	Release code	On	On
DTMF parameters	Tone duration (ms)	120	80
	Pause time (ms)	1.5	3.5
	Interdigit time (ms)	80	100

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PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters

Table 13 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 1 of 4)

Functionality	Attribute	Market profile					
		PRC	Spain	Sweden	Switzerland	Taiwan	United Kingdom
Access codes	Direct dial digit	0	9	0	9	0	0
	Dest code for default route	9	0	0	0	9	0
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ITU-T	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102 + BTNR191
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ITU-T MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	GATv1 GATv2	N/A	N/A	N/A	GATv1 GATv2	GATv1 GATv2
Telephony feature settings	Conference tone supported	No	No	No	No	No	Yes
	Held line reminder	Off	Off	Off	Off	Off	Immediate
	Delay ring transfer	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Transfer callback timeout	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Network callback	30	30	30	30	N/A	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000
	Link time (ms)	600	N/A	600	N/A	600	N/A
	Target line if busy setting	Prime	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime
	BRI ISDN Answer Mode	Manual	Auto	Manual	Auto	Manual	Auto

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Table 13 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 2 of 4)

Functionality	Attribute	Market profile					
		PRC	Spain	Sweden	Switzerland	Taiwan	United Kingdom
System settings	Companding law	A-law	A-law	A-law	A-law	mu-law	A-law
	DTI carrier type	E1	E1	E1	E1	T1	E1
	Number of rings in a cycle	1	2	1	2	1	2
	M7000 set supported	Yes	Yes	Yes	Yes	Yes	Yes
Hunt groups	Mode	Broadcast	Sequential	Broadcast	Sequential	Broadcast	Sequential
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout	60 sec	60 sec	60 sec	60 sec	60 sec	60 sec
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00
	Evening	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00
	Lunch	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00

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Table 13 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 3 of 4)

Functionality	Attribute	Market profile					
		PRC	Spain	Sweden	Switzerland	Taiwan	United Kingdom
Service modes	Ringing service mode	Off	Manual	Off	Manual	Off	Manual
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off
	Restriction global overrides	N/A	N/A	N/A	N/A	N/A	999 112
	Restriction filter 01	0, 1(1800, 1866,1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A	N/A	N/A	0, 1(1800, 1866,1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0(0800), 1
	Restriction filter 05	N/A	N/A	N/A	N/A	N/A	010, 1, 00
	Restriction filter 06	N/A	N/A	N/A	N/A	N/A	*
	Routing service mode	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No
Public DN	Public DN lengths	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(25)	Default(11), 00(17), 01(10), 02(10), 020(9), 0200(10), 02000(7), 020000(10), 0201(10), 02010(9), 07(10), 071(11), 0718(10), 072(11), 077(11), 09(11), 1(3)	Default(25)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 0(11) 00(17), 1(3), 118(6), 9(3)

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Table 13 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 4 of 4)

Functionality	Attribute	Market profile					
		PRC	Spain	Sweden	Switzerland	Taiwan	United Kingdom
Public OLI	Unknown number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
	Local number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
	National number length	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit	Min: 1 digit Max: 18 digit
Set capabilities	Handsfree	Auto	Auto	Auto	Auto	Auto	None
	Pickup group	None	None	None	None	None	None
	Allow redirect	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.							
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	English French Spanish Turkish	EuroSpanish English Portuguese	Swedish English Norwegian Danish	German English EuroFrench Italian	English French Spanish	UKEnglish
ONN blocking	Analog VSC (tone)	None	None	None	None	None	141
	Analog VSC (pulse)	None	None	None	None	None	141
	BRI VSC	None	None	None	None	None	141
	BRI per loop	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SrvcCode
Release reason	Release text	Simple	Simple	Simple	Simple	Simple	Detailed
	Release code	On	On	On	On	On	Off
DTMF parameters	Tone duration (ms)	120	120	120	120	120	120
	Pause time (ms)	1.5	3.5	1.5	3.5	1.5	3.5
	Interdigit time (ms)	80	100	80	100	80	100

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Analog trunk parameters

The following table contains information for the onboard GATI interface, the G4x16/G8x16 MBM (NT5B42AAABE5/NT5B42AAACE5), the new GATM4/8 MBM (NT5B44BAABE5/NT5B44AAABE5), and the legacy GATM4/8 MBM (NT5B44BAAA/NT5B44AAAA) in a BCM450 system. Differences between the interfaces are noted in this table. The 4x16 (NT5B42AAAA) and CTM4/8 MBMs are not covered in this table.

Global analog trunks are not supported in the following market profiles: Denmark, France, Germany, Holland, Italy, Norway, Spain, Sweden, and Switzerland.

Localization, PSTN standards, and pulse dialing parameters

Table 14 Localization, PSTN standards, and pulse dialing parameters (Sheet 1 of 5)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Australia	Yes	None	[1] AS/ACIF S003:2005 (2nd Edition) — Customer Access Equipment for Connection to a Telecommunications Network [2] AS/ACIF S002:2001 — Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network	66	34	860
Bahrain	Yes	Legacy GATM4/8 NOT supported (will not function)	[1] Bahrain PSTN Specification [2] Si3050 Global Voice/Data Direct Access Arrangement Specification [3] AN84 Digital Hybrid with the Si305X DAAS Specification [4] ETSI ETS 300 659-1 Public Switched Telephone Network (PSTN), Subscriber line protocol over the local loop for display (and related) services. Part 1: On hook data transmission.	25	17	700

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Table 14 Localization, PSTN standards, and pulse dialing parameters (Sheet 2 of 5)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Brazil	Yes	DTMF CLID NOT supported on GATI or Legacy GATM4/8	[1] Identification of the Calling Party for SPC With DTMF, 220-250-713. [2] Si3050 Global Voice/Data Direct Access Arrangement Specification.	66	34	800
CALA	No (North American based A-law)	None	N/A	60	40	700
Canada	Yes	None	N/A	60	40	700
Caribbean	Yes	None	N/A	60	40	700
Global	No (North American based A-Law)	None	N/A	60	40	700
Hong Kong	Yes	Line Reversal NOT supported on Legacy GATM4/8	[1] General Technical Characteristics of Fixed Telecommunications Networks in Hong Kong, HKTA 2201, Issue 4, April 2003. [2] Network Connection Specification for Connection of Customer Premises Equipment (CPE) to Direct-Dial-In (DDI) Line of the Public Switched Telephone Network (PSTN) in Hong Kong, HKTA 2013, Issue 3, February 2003. [3] Si3050 Global Voice/Data Direct Access Arrangement Specification. [4] AN84 Digital Hybrid with the Si305X DAAS Specification.	66	33	600

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Table 14 Localization, PSTN standards, and pulse dialing parameters (Sheet 3 of 5)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Ireland	Yes	Legacy GATM4/8 NOT supported (will not function)	[1] Eircom PSTN Interface Specification, Eircom document reference R452 NPD00, Revision: 1.1, 21/7/2000 [2] Si3050 Global Voice/Data Direct Access Arrangement Specification. [3] ETSI ETS 300 659-1 Public Switched Telephone Network (PSTN), Subscriber line protocol over the local loop for display (and related) services. Part 1: On hook data transmission.	66	34	1000
Mexico	Yes	None	[1] Mexico general Specification, June 9, 1993	60	40	700
New Zealand	No (UK-based telephony with Australian tones)	None	[1] PABX External Port Interface Requirements PTC 107: 1989 ISSUE 1. [2] Specification PTC 200 Requirements for Connection of Customer Equipment to Analogue Lines. [3] PTC220 Requirements for Private Voice Networks connected to the PSTN/ISDN DRAFT FOR COMMENT 12 February 2003. [4] The document “TNA 102: June 1996". [5] The document “TNA102 - Amendment to Section 10 and new Section 12.pdf”.	66	34	740
North America	Yes	None	[1] TIA/EIA-716: Telecommunications Telephone Terminal Equipment – Type 1 Caller Identity Equipment Performance Requirements. [2] AN84 – Digital Hybrid with the Si3050 DAA. [3] si3050.pdf	60	40	700

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Table 14 Localization, PSTN standards, and pulse dialing parameters (Sheet 4 of 5)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Poland	Yes	None	[1] Polish ASS_1_v1.doc [2] ITU-T Telecommunication Standardization Sector of ITU Supplement2 Series E 01/94	66	33	700
PRC	Yes	DTMF CLID NOT supported on GATI or Legacy GATM4/8	[1] Feature Description and Detailed Design Description documents of the existing GATI firmware [2] AN84 Digital Hybrid with the Si305x DAAs.pdf [3] si3050.pdf [4] Chapter-8-done.doc [5] PRC Fixed Telephone Network Caller Identity Delivery (YDT1277.1-2003).doc [6] PRC Ringing and Tone for Telephone Automatic Switching Network (GB3380-82).doc	34	66	700
Russia	Yes	Legacy GATM4/8 not supported	[1] OGSTFS – Russian PSTN specs [2] si3050.pdf [3]AN84 Digital Hybrid with the Si305x DAAs.pdf	60	67	60
South Africa	Yes	Legacy GATM4/8 not supported	[1]S_Africa_Specs.pdf [2]ICASA TE-010.doc [3] si3050.pdf [4]AN84 Digital Hybrid with the Si305x DAAs.pdf	40	33	40
Spain	Yes	Legacy GATM4/8 not supported	[1]M1_Analogue_Trunk_Card_Spain.pdf [2]Public Switched Telephone Network Analogue Line interface specification “Interfaz_de_telefonica_de_Espa_a-v5_Eng.doc” [3] si3050.pdf [4]AN84 Digital Hybrid with the Si305x DAAs.pdf	600	950	200

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Table 14 Localization, PSTN standards, and pulse dialing parameters (Sheet 5 of 5)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Taiwan	Yes	None	[1] Technical Specifications for Terminal Equipment for Connection to Public Switched Telephone Network, PSTN01, September 27, 2001	66	33	800
United Kingdom	Yes	None	[1] BT Public Switched Telephone Network (PSTN): SIN352 [2] BT Public Switched Telephone Network (PSTN): SIN227 +AC7 [3] BT Public Switched Telephone Network (PSTN): SIN242 [4] AN84 – Digital Hybrid with the Si3050 DAA [5] Si3050/Si3019 Global Voice/ Data Direct Access Arrangement	66	34	740

Transmission parameters

Table 15 Transmission parameters (Sheet 1 of 2)

Market profile	Transmission				
	PCM coding scheme	AC impedance	Loop length adjustment capability	Tx CO gain (short, medium, long)	Rx CO gain (short, medium, long)
Australia	A-law	220 W + (820 W || 120 nF)	No	(N/A, 0, N/A)	(N/A, 6 dB, N/A)
Bahrain	A-law	900 W + 2.16 uF	Yes	(0, 3 dB, 3 dB)	(3, 3 dB, 6 dB)
Brazil	A-law	600 W/900 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
CALA	A-law	600 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Canada	mu-law	600 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Caribbean	mu-law	600 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Global	A-law	600 W	Yes	(0, 3 dB, 3 dB)	(3 dB, 3 dB, 6 dB)
Hong Kong	mu-law	600 W	No	(N/A, 0, N/A)	(N/A, 6 dB, N/A)
Ireland	A-law	270 W + (750 W||150 nF)	Yes	(0, 3 dB, 3 dB)	(3 dB, 3 dB, 6 dB)
Mexico	A-law	600 W	Yes	(0, 3 dB, 3 dB)	(3 dB, 3 dB, 6 dB)

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Table 15 Transmission parameters (Sheet 2 of 2)

Market profile	Transmission				
	PCM coding scheme	AC impedance	Loop length adjustment capability	Tx CO gain (short, medium, long)	Rx CO gain (short, medium, long)
New Zealand	A-law	320 W + (1050 W || 230 nF)	No	(N/A, 3 dB, N/A)	(N/A, 3 dB, N/A)
North America	mu-law	600 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Poland	A-law	600 W	No	(N/A, 3 dB, N/A)	(N/A, 3 dB, N/A)
PRC	A-law	600 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Russia	A-law	600 W	Yes		
South Africa	A-law	220 W + (820 W || 115 nF)	No		
Spain	A-law	270 W + (750 W || 150 nF)	No		
Taiwan	u-law	600 W	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
United Kingdom	A-law	320 W + (1050 W || 230 nF)	No	(N/A, 3 dB, N/A)	(N/A, 3 dB, N/A)

Call supervision parameters

Table 16 Call supervision parameters (Sheet 1 of 2)

Market profile	Call supervision				
	Link/flash time (ms)	OSI time (ms)	Force on-hook time (ms)	Wetting time (ms)	Ring confirmation count (ms)
Australia	100	100	1600	0	150
Bahrain	600	100	1600	N/A	256
Brazil	300	100	2000	N/A	256
CALA	600	100	1500	N/A	256
Canada	600	100	1600	N/A	256
Caribbean	600	100	1600	N/A	256
Global	600	100	1500	N/A	256
Hong Kong	500	100	1000	N/A	256
Ireland	150	100	2000	N/A	200
Mexico	600	100	1600	N/A	256
New Zealand	90	100	1600	15	200
North America	600	100	1600	N/A	256
Poland	500	500	1800	N/A	256
PRC	600	100	1600	N/A	256
Russia	100	100	400	0	256

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Table 16 Call supervision parameters (Sheet 2 of 2)

Market profile	Call supervision				
	Link/flash time (ms)	OSI time (ms)	Force on-hook time (ms)	Wetting time (ms)	Ring confirmation count (ms)
South Africa	100	100	1600	0	256
Spain	120	100	1600	0	256
Taiwan	600	100	1600	0	256
United Kingdom	90	100	1600	15	200

On-hook caller ID, disconnect supervision, and message waiting parameters

Table 17 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 1 of 3)

Market profile	On-hook caller ID		Disconnect supervision			Message waiting		
	FSK	DTMF (Start Digit, Stop Digit)	OSI	Busy tone	Line reversal	FSK	Voltage reversal	Stutter dial tone
Australia	Bellcore	Not supported	No	No	ROI and ROA	Supported	Not supported	Not supported
Bahrain	ETSI	Not supported	No	Supported (425 ±10% Hz, 380 ±10% on/ 380 ±10%off)	No	Supported	Not supported	Not supported
Brazil	Not supported	Supported (A,C). NOTE: Not Supported on GATI or Legacy GATM4/8	No	Supported (425 ± 25 Hz, 250 ms On /250 ms Off ± 10%)	No	Supported	Not supported	Not supported
CALA	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Canada	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Caribbean	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Global	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported

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Table 17 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 2 of 3)

Market profile	On-hook caller ID		Disconnect supervision			Message waiting		
	FSK	DTMF (Start Digit, Stop Digit)	OSI	Busy tone	Line reversal	FSK	Voltage reversal	Stutter dial tone
Hong Kong	Bellcore	Not supported	No	Supported (480 ± 10 Hz and 620 ± 10 Hz, 500 ± 100 ms On / 500 ± 80 ms Off)	Yes (NOT supported on Legacy GATM4/8)	Supported	Not supported	Not supported
Ireland	ETSI	Not supported	No	Supported (425 Hz ± 25%, 450 ms On/ 450 ms Off ± 23%)	No	Supported	Not supported	Not supported
Mexico	ETSI	Not supported	No	Supported (425 Hz, 250 ms On/ 250 ms Off)	No	Supported	Not supported	Not supported
New Zealand	ETSI	Not supported	Yes (500 ms UK Guarded Clear)	No	No	Supported	Not supported	Not supported
North America	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Poland	ETSI	Not supported	No	Supported in unsupervised mode (425 Hz, 500 ms On/ 500 ms Off)	Supported in supervised mode	Supported	Not supported	Not supported
PRC	Bellcore	Supported (A/C) NOTE: Not Supported on GATI or Legacy GATM4/8	No	Supported (450 ± 25 Hz, 350 ms On/ 350 ms Off ± 10%)	No	Supported	Not supported	Not supported

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Table 17 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 3 of 3)

Market profile	On-hook caller ID		Disconnect supervision			Message waiting		
	FSK	DTMF (Start Digit, Stop Digit)	OSI	Busy tone	Line reversal	FSK	Voltage reversal	Stutter dial tone
Russia	ETSI	Not supported	No	Supported (425 ± 50 Hz, 400 ms On/ 400 ms Off ± 100ms)	No	Supported	Not Supported	Not Supported
South Africa	ETSI	Not supported	No	Supported in Supervised Mode (400 ± 25 Hz, 500 ms On/ 500 ms Off ± 100ms)	Yes (Supported in Supervised mode)	Supported	Not Supported	Not Supported
Spain	ETSI	Not supported	No	No	Yes (Supported in Supervised mode)	Supported	Not Supported	Not Supported
Taiwan	ETSI	Supported (D, C)	No	Supported (480 + 620 Hz, 500 ms On/ 500 ms Off)	No	Supported	Not supported	Not supported
United Kingdom	ETSI	Not supported	Yes (500 ms UK Guarded Clear)	No	No	Supported	Not supported	Not supported

GASM8 parameters

This section contains information for the GASM8 MBM.

Global analog stations are not supported in the following market profiles: Brazil, CALA, Denmark, France, Germany, Holland, Italy, Norway, PRC, Spain, Sweden, Switzerland, and Taiwan.

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Localization, DIP switch settings, specifications, and transmission parameters

Table 18 Localization, DIP switch settings, specifications, and transmission parameters (Sheet 1 of 2)

Market profile	Localized	DIP switch setting	Specifications	Transmission		
			Standards used	Terminal Input impedance	Nominal Network Input Impedance	PCM coding scheme
Australia	Yes	Australia	TS 003 TCE2	220 W + (820 W || 120 nF)	220 W + (820 W || 120 nF)	A-law
Bahrain	No (North American Based A-Law)	North America	N/A	600 W	600 W	A-law
Canada	Yes	North America	Refer to North America Specs	600 W	600 W	mu-law
Caribbean	Yes	North America	Refer to North America Specs	600 W	600 W	mu-law
Global	No (North American based A-law)	North America	N/A	600 W	600 W	A-law
Hong Kong	No (North American based mu-law)	North America	N/A	600 W	600 W	mu-law
Ireland	No (UK-Based)	UK	N/A	370 W + (620 W || 310 nF)	300 W + (1000 W || 220 nF)	A-Law
Mexico	No (North American based A-law)	North America	N/A	600 W	600 W	A-law
New Zealand	No (UK-based telephony with Australian tones)	UK	N/A	370 W + (620 W || 310 nF)	300 W + (1000 W || 220 nF)	A-law
North America	Yes	North America	EIA/TIA-464A CS-03 Part I T512.1 T512.2	600 W	600 W	mu-law

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Table 18 Localization, DIP switch settings, specifications, and transmission parameters (Sheet 2 of 2)

Market profile	Localized	DIP switch setting	Specifications	Transmission		
			Standards used	Terminal Input impedance	Nominal Network Input Impedance	PCM coding scheme
Poland	Yes	Poland	[1] Polish ASS_1_v1.doc 2] Technical Requirements for Private Automatic Branch Exchanges. Reference Analog interfaces11.doc	600 W	600 W	A-law
United Kingdom	Yes	UK	BS 6450 Part 4 BTNR 1080 EN 41003 AnnexD BS 6305 BTNR 315	370 W + (620 W || 310 nF)	300 W + (1000 W || 220 nF)	A-law

Loop interface and call supervision parameters

Table 19 Loop interface and call supervision parameters (Sheet 1 of 2)

Market profile	Loop interface				Call supervision				
	Ringing frequency (Hz)	Ringing amplitude (Vrms)	Loop Current Detect Thres-hold (mA)	Loop current limit (mA)	Min. seize duration (ms)	Min. answer duration (ms)	Min/max recall duration (ms)	Min. clear duration (ms)	Disconnect Super-vision OSI Time (ms)
Australia	25	65	18	32	200	50	30/150	1500	800
Bahrain	20	65	18	32	150	25	250/1100	1400	850
Canada	20	65	18	32	150	25	250/1100	1400	850
Caribbean	20	65	18	32	150	25	250/1100	1400	850
Global	20	65	18	32	150	25	250/1100	1400	850
Hong Kong	20	65	18	32	150	25	250/1100	1400	850
Ireland	25	65	18	32	200	50	15/150	1500	850
Mexico	20	65	18	32	150	25	250/1100	1400	850
New Zealand	25	65	18	32	200	50	15/150	1500	850
North America	20	65	18	32	150	25	250/1100	1400	850

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Table 19 Loop interface and call supervision parameters (Sheet 2 of 2)

Market profile	Loop interface				Call supervision				
	Ringing frequency (Hz)	Ringing amplitude (Vrms)	Loop Current Detect Thres-hold (mA)	Loop current limit (mA)	Min. seize duration (ms)	Min. answer duration (ms)	Min/max recall duration (ms)	Min. clear duration (ms)	Disconnect Super-vision OSI Time (ms)
Poland	25	65	18	32	180	80	75/520	680	800
United Kingdom	25	65	18	32	200	50	15/150	1500	850

Dial pulse and DTMF parameters

Table 20 Dial pulse and DTMF parameters

Market profile	Dial pulse				DTMF	
	Dial pulse coding scheme	Min/max break duration (ms)	Min/max make duration (ms)	Min interdigit pause duration (ms)	DTMF coding scheme (digits)	Min DTMF detect level (dB)
Australia	N	40/90	20/60	300	16	-36
Bahrain	N	25/120	10/90	250	12	-36
Canada	N	25/120	10/90	250	12	-36
Caribbean	N	25/120	10/90	250	12	-36
Global	N	25/120	10/90	250	12	-36
Hong Kong	N	25/120	10/90	250	12	-36
Ireland	N	15/200	15/200	200	16	-36
Mexico	N	25/120	10/90	250	12	-36
New Zealand	N	15/200	15/200	200	16	-36
North America	N	25/120	10/90	250	12	-36
Poland	N	44/88	25/48	400	12	-36
United Kingdom	N	15/200	15/200	200	16	-36

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MWI, On-hook Caller Id, Disconnect Supervision

Table 21 MWI, On-hook Caller Id, Disconnect Supervision

Market profile	MWI				On-hook Caller Id	Disconnect Supervision		
	High Voltage (HV)	Line Reversal (LR)	Tone	Class MWI	FSK support	OSI	Busy Tone	Line Reversal
Australia	Supported 110 V	Not supported	Supported	Not supported	Yes - AUSTEL TS 030	Supported	Not supported	Not supported
Bahrain	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Canada	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Caribbean	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Global	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Hong Kong	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Ireland	Not supported	Supported	Supported	Not supported	Yes - BT-SIN227	Supported	Not supported	Not supported
Mexico	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
New Zealand	Not supported	Supported	Supported	Not supported	Yes - BT-SIN227	Supported	Not supported	Not supported
North America	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Poland	Supported 110 V	Not supported	Supported	Not supported	Yes - ETSI	Supported	Not supported	Not supported
United Kingdom	Not supported	Supported	Supported	Not supported	Yes - BT-SIN227	Supported	Not supported	Not supported

GASI parameters

This section contains information for the onboard GASI interface.

GASI interfaces are not supported in the following market profiles: Australia, Bahrain, Brazil, CALA, Denmark, France, Germany, Holland, Ireland, Italy, Mexico, New Zealand, Norway, Poland, PRC, Spain, Sweden, Switzerland, Taiwan, UK.

Note that the GASI currently has not been localized for markets except North America. The GASI will function in some profiles outside of North America; however, the interface will respond with North American characteristics.

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GASI parameters

Table 22 GASI parameters (Sheet 1 of 2)

Aspect	Parameter	Market Profile				
		Canada	**Caribbean**	**Global**	**Hong Kong**	**North America**
Market Support	Localized?	Yes	Yes	No (North American Based A-Law)	No (North American Based A-Law)	Yes
Transmission	Terminal Input Impedance	600 W	600 W	600 W	600 W	600 W
	Nominal Network Input Impedance	600 W	600 W	600 W	600 W	600 W
	PCM Coding Scheme	mu-Law	mu-Law	A-Law	mu-Law	mu-Law
Loop Interface	Ringing Frequency (Hz)	20	20	20	20	20
	Ringing Amplitude (Vrms)	63	63	63	63	63
	Loop Current Detect Threshold (mA)	10.16	10.16	10.16	10.16	10.16
	Loop Current Limit (mA)	26	26	26	26	26
Call Supervision	Minimum Seize Duration (ms)	200	200	200	200	200
	Minimum Answer Duration (ms)	10	10	10	10	10
	Minimum/ Maximum Recall Duration (ms)	250/1100	250/1100	250/1100	250/1100	250/1100
	Minimum Clear Duration (ms)	1400	1400	1400	1400	1400
	Disconnect Supervision OSI Time (ms)	800	800	800	800	800

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Table 22 GASI parameters (Sheet 2 of 2)

Aspect	Parameter	Market Profile				
		Canada	Caribbean	Global	Hong Kong	North America
Dial Pulse	Dial Pulse Coding Scheme	N	N	N	N	N
	Minimum/ Maximum Break Duration (ms)	25/120	25/120	25/120	25/120	25/120
	Minimum/ Maximum Make Duration (ms)	10/90	10/90	10/90	10/90	10/90
	Minimum Interdigit Pause Duration (ms)	250	250	250	250	250
DTMF	DTMF Coding Scheme (digits)	16	16	16	16	16
	Min DTMF Detect Level (A) (dBm)	-27	-27	-27	-27	-27
MWI	HIgh Voltage (HV)	Supported - 95V	Supported - 95V	Supported - 95V	Supported - 95V	Supported - 95V
	Line Reversal (LR)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
	Tone	Supported	Supported	Supported	Supported	Supported
	Class MWI	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
On-hook Caller ID	FSK Support	Yes - Bellcore	Yes - Bellcore	Yes - Bellcore	Yes - Bellcore	Yes - Bellcore
DIsconnect Supervision	OSI	Supported	Supported	Supported	Supported	Supported
	Busy Tone	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
	Line Reversal	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
Specifications	Standards used	Refer to North America Specs	Refer to North America Specs	N/A	N/A	EIA/TIA-464A CS-03 Part I T512.1 T512.2

ATA2 parameters

This section contains information for the ATA2 device. The ATA2 is either DR6 or DR7 mode. The mode is determined by the region in which you are located, and is not a modifiable user preference. Refer to the following tables for a list of parameters in each mode.

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ATA2 DR6

Table 23 ATA2 DR6 Market Support, Transmission, Loop Interface, Call Supervision, and Dial Pulse parameters (Sheet 1 of 2)

Market profile	Market Support	Transmission	Loop Interface	Call Supervision		Dial Pulse		
				Duration (ms)		Dial Pulse Coding Scheme	Duration (ms)	
	Localized?	Terminal Input Impedance	Ringing Frequency (Hz)	Min/Max Recall	Min Clear		Min/ Max Break	Min/ Max Make
Australia	Yes	220 W + (820 W || 120 nF)	25	10/150	310	N	20/125	10/230
Bahrain	No (North American Based A-Law)	600 W	20	290/ 1010	1500	N	20/130	15/130
Canada	Yes	600 W	20	290/ 1010	1500	N	20/130	15/130
Caribbean	Yes	600 W	20	290/ 1010	1500	N	20/130	15/130
Global	No (North American Based A-Law)	600 W	20	290/ 1010	1500	N	20/130	15/130
Hong Kong	No (North American Based mu-Law)	600 W	20	290/ 1010	1500	N	20/130	15/130
Ireland	No (UK based)	300 W + (1000 W || 220 nF)	25	10/150	310	N	20/125	10/230
Mexico	No (North American Based A-Law)	600 W	20	290/ 1010	1500	N	20/130	15/130
New Zealand	No (UK Based)	300 W + (1000 W || 220 nF)	25	10/150	310	N	20/125	10/230
North America	Yes	600 W	20	290/ 1010	1500	N	20/130	15/130
PRC	No (North American Based A-Law)	600 W	20	290/ 1010	1500	N	20/130	15/130

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Table 23 ATA2 DR6 Market Support, Transmission, Loop Interface, Call Supervision, and Dial Pulse parameters (Sheet 2 of 2)

Market profile	Market Support	Transmission	Loop Interface	Call Supervision		Dial Pulse		
				Duration (ms)		Dial Pulse Coding Scheme	Duration (ms)	
	Localized?	Terminal Input Impedance	Ringing Frequency (Hz)	Min/Max Recall	Min Clear		Min/ Max Break	Min/ Max Make
Taiwan	No (North American Based mu-Law)	600 W	20	290/ 1010	1500	N	20/130	15/130
United Kingdom	Yes	300 W + (1000 W || 220 nF)	25	10/150	310	N	20/125	10/230

ATA2 DR7

Table 24 ATA2 DR7 Market Support, Transmission and Loop Interface parameters (Sheet 1 of 2)

Market profile	Market Support	Transmission		Loop Interface			
	Localized?	Terminal Input Impedance	PCM Coding Scheme	Ringing Frequency (Hz)	Ringing Amplitude (Vrms)	Loop Current Detect Threshold (mA)	Loop Current Limit (mA)
Brazil	Yes	900 W	A-Law	25	75	18	85
CALA	Yes	900 W	A-Law	25	75	18	85
Denmark	Yes	300 W + (1000 W || 220 nF)	A-Law	25	75	12	85
France	Yes	210 W + (1020 W || 140 nF)	A-Law	25	75	6	65
Germany	Yes	220 W + (820 W || 110 nF)	A-Law	25	75	6	55
Holland	Yes	300 W + (1000 W || 220 nF)	A-Law	25	75	12	55
Italy	Yes	180W + (620 W || 62 nF)	A-Law	25	75	6	23
Norway	Yes	120 W + (840 W || 110 nF)	A-Law	25	75	12	85

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Table 24 ATA2 DR7 Market Support, Transmission and Loop Interface parameters (Sheet 2 of 2)

Market profile	Market Support	Transmission		Loop Interface			
	Localized?	Terminal Input Impedance	PCM Coding Scheme	Ringing Frequency (Hz)	Ringing Amplitude (Vrms)	Loop Current Detect Threshold (mA)	Loop Current Limit (mA)
Poland	Yes	220 W + (820 W || 120 nF)	A-Law	50	80	18	40
Spain	Yes	220 W + (820 W || 120 nF)	A-Law	25	75	6	55
Sweden	Yes	200 W + (1000 W || 200 nF)	A-Law	25	75	12	30
Switzerland	Yes	220 W + (820 W || 120 nF)	A-Law	25	75	6	55

Table 25 ATA2 DR7 Call Supervision, Dial Pulse, and DTMF parameters

Market profile	Call Supervision				Dial Pulse				DTMF	
	Duration (ms)				Dial Pulse Coding Scheme	Duration (ms)				
	Min Seize	Min Answer	Min/Max Recall	Min Clear		Min/ Max Break	Min/ Max Make	Min Interdigit Pause	DTMF Coding Scheme (digits)	Min DTMF Detect Level (A) (dBm0)
Brazil	200	50	250/1100	750	N	40/90	15/55	250	16	-25
CALA	200	50	250/1100	750	N	40/90	15/55	250	16	-25
Denmark	200	50	80/140	750	N	15/200	15/200	200	16	-25
France	140	50	220/320	225	N	60/75	25/40	800	16	-25
Germany	150	50	80/120	225	N	50/70	30/50	650	16	-25
Holland	200	50	90/130	750	N	30/70	25/80	400	16	-25
Italy	150	50	80/140	225	N	50/70	30/50	700	16	-25
Norway	200	50	80/150	750	N	30/70	25/80	400	16	-40
Poland	200	50	25/150	750	N	40/90	20/60	300	16	-25
Spain	150	50	80/140	225	N	60/75	25/40	450	16	-25
Sweden	200	50	30/150	125	N+1	30/70	25/80	450	16	-28
Switzerland	150	50	80/140	225	N	50/70	30/50	350	16	-25

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Voice mail

The following voicemail parameter values are the same for all countries:

- AMIS Address Start Key: #
- Country Key Language Toggle: 9
- Country Key Operator Revert: 0
- Maximum CLID Entry: 16
- Maximum Network DN Length: 16
- Maximum Packet Network DN Length: 8
- Broadcast Key Event: 9

Voicemail parameters, by country

Table 26 Voicemail parameters, by country (Sheet 1 of 3)

Market	Country Login Mailbox Key	Alternate QZ Mapping	Default Language	Enable Touch Tone Gate	Local Number Length	Maximum CLID Display	National Number Length
Argentina	8	YES	Spanish	NO	8	16	12
Australia	8	YES	Australian English	NO	8	8	9
Austria	*	YES	German	NO	7	16	11
Bahrain	*	YES	Arabic	NO	6	16	6
Brazil	**	YES	North American English	NO	8	8	10
Cala	**	YES	Spanish	NO	8	8	8
Caribbean	**	NO	North American English	NO	7	7	10
Chile	8	YES	Spanish	NO	7	16	11
Columbia	8	YES	Spanish	NO	7	16	12
Czech	*	YES	Czech	NO	7	16	11
Denmark	8	YES	Danish	NO	8	8	11
Finland	8	YES	Finnish	NO	9	16	11
France	8	YES	Euro French	NO	7	7	14
Germany	8	YES	German	NO	7	7	11
Global	8	YES	North American English	NO	7	16	11
Holland	8	YES	Dutch	NO	7	7	11

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Table 26 Voicemail parameters, by country (Sheet 2 of 3)

Market	Country Login Mailbox Key	Alternate QZ Mapping	Default Language	Enable Touch Tone Gate	Local Number Length	Maximum CLID Display	National Number Length
Hong Kong	**	NO	North American English	NO	11	9	10
India	*	YES	United Kingdom English	NO	7	16	14
Indonesia	*	YES	United Kingdom English	NO	7	16	10
Ireland	*	YES	United Kingdom English	NO	7	16	10
Italy	8	YES	Italian	NO	7	7	11
Malaysia	*	YES	United Kingdom English	NO	8	16	10
Mexico	*	YES	Spanish	NO	7	16	10
New Zealand	8	YES	Australian English	NO	7	16	8
North America	**	NO	North American English	NO	7	16	10
Norway	8	YES	Norwegian	NO	7	16	11
Pakistan	*	YES	United Kingdom English	NO	7	16	12
Panama	8	YES	Spanish	NO	7	16	7
Peru	8	YES	Spanish	NO	7	16	9
Philippines	*	YES	Spanish	NO	7	16	11
Portugal	8	YES	Portuguese	NO	7	16	9
Poland	*	YES	Polish	NO	7	16	11
POC	**	NO	Mandarin	NO	11	9	10
Qatar	*	YES	Arabic	NO	6	16	6
Romania	8	YES	German	NO	7	16	8
Russia	*	YES	Russian	NO	7	16	12
Saudi Arabia	*	YES	Arabic	NO	7	16	8
Singapore	*	YES	United Kingdom English	NO	8	16	8

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Table 26 Voicemail parameters, by country (Sheet 3 of 3)

Market	Country Login Mailbox Key	Alternate QZ Mapping	Default Language	Enable Touch Tone Gate	Local Number Length	Maximum CLID Display	National Number Length
South Africa	*	YES	United Kingdom English	NO	7	16	12
South Korea	*	YES	Korean	NO	7	16	10
Spain	8	YES	Euro Spanish	NO	7	7	11
Sweden	8	YES	Swedish	NO	8	8	11
Switzerland	8	YES	German	NO	7	7	11
Taiwan	**	NO	Mandarin	NO	7	7	12
Thailand	*	YES	Thai	NO	7	16	10
UK	8	YES	United Kingdom English	YES	11	9	11
United Arab Emirate	*	YES	Arabic	NO	6	16	8
Uruguay	8	YES	Spanish	NO	6	16	10
Venezuela	8	YES	Spanish	NO	7	16	9

ISDN line services

The following table shows the ISDN private network services that are supported by BCM450. The table shows the network-based ISDN supplementary services and the features available for each.

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Table 27 ISDN line services

MCDN over PRI (SL-1)	DPNSS	DASS2	ETSI QSIG
Basic Call	Basic Call	Basic Call	Basic Call
DDI	DDI	DDI	DDI
Name display	Diversion	Originating line identity (OLI)	Name display
Number display	Redirection	Terminating Line Identity (TLI)	Number display
Centralized voice mail	Centralized voice mail	Call Charge Indication (CCI)	
Camp-on	Call Offer	Call Charge Rate Indication (CCRD)	
ISDN Call Connection Limit	Loop avoidance		
Network Call Transfer	Executive Intrusion		
Break-in	Three Party		
Trunk Route Optimization (TRO)	Route Optimization		
Trunk Anti-Tromboning			

ISDN services by Protocol

Protocol	Market profile		Available ISDN services	
NI	Caribbean	North America	Basic Call	Number display
			DID	ONN blocking
			Name display	
ETSI Euro	Australia	Italy	Basic Call	AOC-E (specific changes for Holland and Italy)
	CALA	Norway	DDI	MCID
	Denmark	PRC	sub addressing (on S-loop)	CLIP
	Germany	Spain	ETSI Call Diversion (partial rerouting)	COLP
	Global	Sweden		CLIR
	Holland	Switzerland		
		United Kingdom		
HKTA2015	Hong Kong	Taiwan	Basic Call	COLP
			DDI	CLIR
			CLIP	

Analog and digital trunk types

The table Analog and digital trunk types and descriptions on page 282 describes the types of analog and digital trunks.

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Some of these trunk types are available only when you select specific market profiles.

Table 28 Analog and digital trunk types and descriptions (Sheet 1 of 2)

Trunk Types	Description
Digital Carrier Types:	
T1/E1	Digital line that carries data on 24 channels at 1.544 Mbps (North American); 30 channels at 2048 Mbps (Europe) Loop, E&M, DID and ground start lines are also versions of T1 lines. You can program autoanswer T1 loop start, T1 E&M trunks, T1 DID, T1 ground start trunks, PRI and IP trunks to map to target lines to provide for attendant bypass (calling directly to a department or individual) and line concentration (one trunk can map onto several target lines).
T1 Digital Trunk Types:	
DID	This is a type of T1 trunk line used by an outside caller to dial directly into a line on the BCM50.
Loop	This is a type of T1 line. Use this type of line on systems where the service provider supports disconnect supervision for the digital loop start trunks. These trunks provide remote access to the Business Communications Manager from the public network. This trunk must have disconnect supervision so you can set the trunk to autoanswer, which provides the remote access portal.
Ground	T1-groundstart trunk These lines offer the same features as loop start trunks, but use these lines when the local service provider does not support disconnect supervision for digital loop start trunks. Ground start trunks work with T1 only. By configuring lines as ground start, the system recognizes when a call is released at the far end.
E&M	T1 and E&M. Use this type of trunk line to create simple network connections to other phone systems. This trunk always operates in a disconnected supervised mode.
PRI	ISDN interface with 23 B channels and 1 D channel at 1.544 Mbps. These lines give you incoming and outgoing access to an ISDN network and are autoanswer trunks.
E1 Digital Trunk Types:	
DASS2	(British) Trunk provides multiline IDA interconnection to the British Telecom network.

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Table 28 Analog and digital trunk types and descriptions (Sheet 2 of 2)

Trunk Types	Description
DPNSS	You can use a digital private network signaling system to tie together phone systems from various manufacturers over E1 lines, offering significant enhancements to BCM50 networking capabilities. DPNSS makes it easy to support centralized network functionality within private networks for operators and attendants dealing with large numbers of calls. The routing capabilities provide more larger-network capabilities without the expense of installing a new system, reconfiguring all the nodes or incurring extensive downtime. Most functionality over DPNSS lines is transparent after you program the DPNSS into the system. DPNSS uses a local node, acting as a terminating node, to communicate with other PBXs over the network using E1 lines. For example, you can link corporate offices separated geographically over DPNSS lines to other BCM50 systems, bypassing the restrictions of the PSTNs to which they are connected. BCM50 systems can function like a private network using DPNSS.
R2MFC	Provides MFC-R2 (Multi-Frequency Compelled R2) signaling over an E1 trunk.
PRI	ISDN interface with 30 B channels and 1 D channel at 1.544 Mbps. These lines give you incoming and outgoing access to an ISDN network and are autoanswer trunks.
Other Trunk Types:	
BRI	The BRI loop supports both trunk (T-loop) and terminal equipment (S-loop) configurations. BRI provides two bearer B-channels operating at 64 kbits/s and a data D-channel that operates at 16 kbits/s. BRI uses the D-channel to carry call information. When configured as a trunk (T-loop), the BRI loop supports the following protocol variants: NI-2: Connects to the network's S-reference point and uses regular line pools. These trunks can be manual answer or auto-answer. ETSI Euro: There are two types of connections: The S-T type connects to the network's S reference point and uses regular line pools. These trunks can be manual answer or auto-answer. The T-T type connects to the network's T reference point and uses the Bloc pool type. These trunks are auto-answer. ETSI QSIG: Connects to the network's T reference point and uses the Bloc pool type. These trunks are auto-answer.
IP	Provides H.323 and SIP trunking between BCM and PBX nodes.
Analog Trunk Types:	
Loop start	Standard PSTN telephone line.
ADID	An analog trunk that allows an outside caller to dial directly into a line on the BCM system. This type of trunk provides one way (incoming only) call service.

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Configuration — System

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Sourced in Canada, the United States, and the United Kingdom

Publication: NN40160-501
Document status: Standard
Document issue: 01.05
Document date: October 2009
Product release: BCM450 1.0
Job function: Configuration
Type: Technical Publication
Language type: English

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